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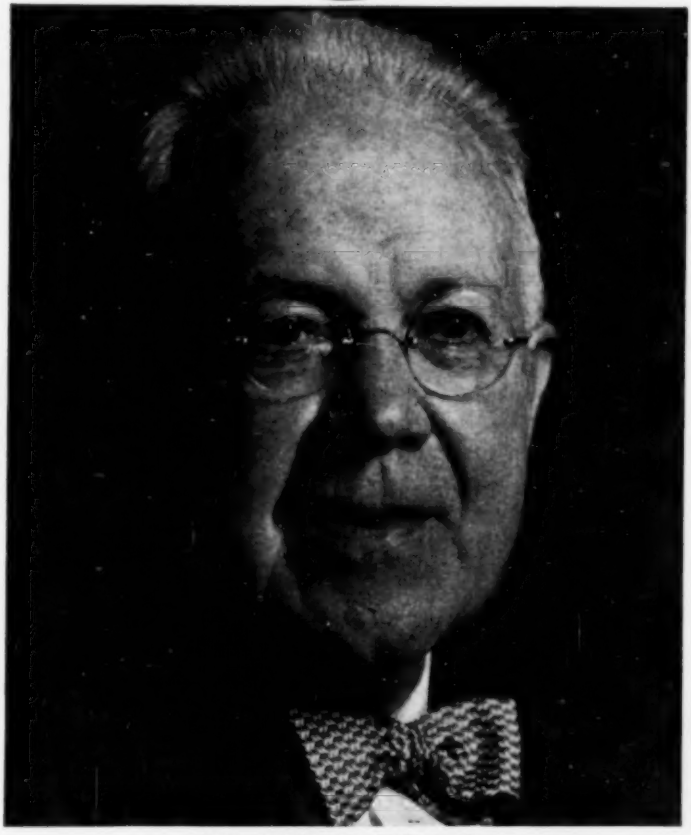

DR. EMIL R. RIEGEL

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(See page 530)

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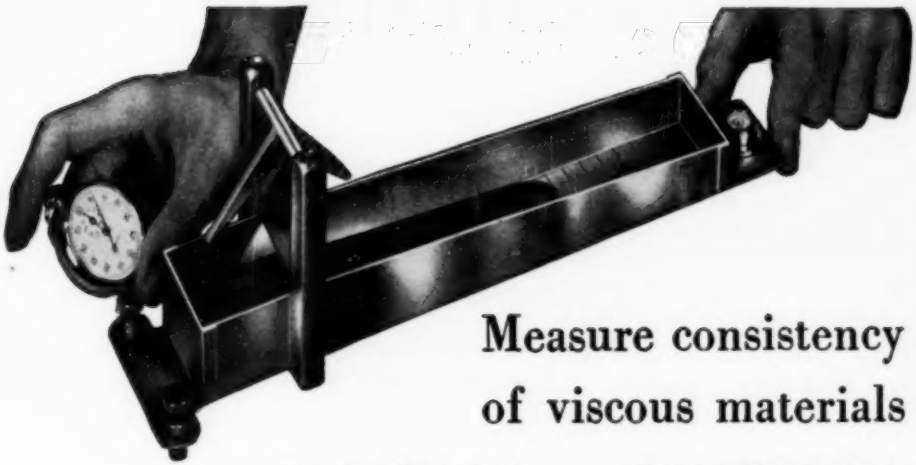

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SCHEDULED FOR EARLY PUBLICATION

Sixteen Years of Chemical Education in China, Dr. Peter P. T. Sah
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Nuclear Energy for Industry, Dr. Glenn T. Seaborg, Hon. AIC.
Award of Honorary Membership to Dr. Seaborg.
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Chicago Chapter Award to Bernard E. Schaar.
Annual Reports
The Philosophy and Objectives of Research, Dr. M. L. Crossley, Hon. AIC.
A Chemist Looks at Human Blood, Dr. Herman J. Schneiderwirth, F.A.I.C.

In This Issue

ANNUAL MEETING PAPERS

Continuing the series of excellent papers presented at the 1952 AIC Annual Meeting, the following articles will appear in the December and later issues of THE CHEMIST:

The Technical Editor's Approach to an Expanding Literature, by D. O. Myatt
The Orientation of Research Activities, by Raymond Stevens, F.A.I.C.
Safety and Hygiene in the Use of Radioisotopes, by John C. Pennock
Industrial Problems in Skin Cancer, by Dr. Ernest L. Wynder
The Consultant's Organization, by Dr. Foster D. Snell, F.A.I.C.
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EDITORIAL

How Practical is the Study of the History of Chemistry?

Dr. Eduard Farber, F.A.I.C., 4530 *Brandywine Street, N.W., Washington* 16, *D. C.*

IF SOMEONE could convincingly prove that we could learn from the history of political events how to solve our present problem to prepare a brighter future, the study of history would gain first-rank among the subjects of education. I know of one example from recent times, when the only man—perhaps the only well-known man—who correctly predicted the outcome of the 1948 presidential elections did so through his studies of the history of our elections. He was successful because he brought to this study a good array of interpreting tools. Without them, the treasures hidden in the records of past events would remain inaccessible.

Even when some value in the history of political developments is admitted, the history of science is often seen in a different light. Usually, we assume that the lessons of our past are directly causing our progress in science, so that it takes care of itself without any effort on our part to separate this history out for study. In assuming this, we consider science as a completely self-supporting object, existing as a separate unit, an organism and system of truths which have reality in some world of their own before we bring them into the world of men and recognition. Whether this is actually so was the subject of discussion many centuries ago, when the controversy between realism and nominalism was dividing the schools of philosophers. What do we as chemists have to learn from such brain-teasers?

Chemistry at that time, and well into the 17th century, was part philosophy, part handicraft. The chemists who made a science of their occupation could have derived much practical benefit from a study of this philosophical discussion in the middle ages. Chemists to-day, struggling with problems of nomenclature, could conceivably learn from the efforts to find appropriate names for chemical compounds in the New System for which the group around Lavoisier used the advice of the great French philosophers.

There is a fundamental difference between the post-factum claim that we could have gained from historical studies, and the demonstrated fact that we did. It is worthwhile to consider the claim as well as the fact, because even the claim might become

significant for our guidance in the future. I remember an ingenious discovery at one of our University Laboratories when the problem was to bring a substance into the ebullioscopic tube without opening it to the surrounding air. The key of the stopcock was bored only half-way through, so that it could be filled in one position and turned 180° to drop the sample into the tube. This discovery had been described a little over one hundred years before; it was available in print and accessible in every scientific library. Nobody would have been justified in going through several hundred volumes of journals instead of trying to find the solution by figuring it out himself. Yet this is the very heart of science, that it prepares not just for one problematic situation but provides the equipment from which to choose, and how to go about choosing it, in every special emergency.

This is not achieved by a dead repository of figures nor by disconnected dots of facts. Suppose, in ordering a copy of a patent, you had made an error in writing down the number. The result would have been thoroughly discouraging, but you could have corrected it easily if you had also known the name of the inventor and the subject, or had access to a complete collection of patents. The analogy which this example offers to our problem is the need for systematic connection, the knowledge of the place which the "simple" fact occupies in science to provide it with meaning, to make it recognizable. The claim I mentioned above can now be generally formulated: It would be practical to extend the system in which facts become meaningful along the time coordinate, in conjunction with the subject as abscissa.

The rediscovery of the chlorinated phenols, the revival of methods of adsorption and chromatography, or, on an even broader scale, of Avogadro's theory, the Pasteur's observation of antibiotic action, are some examples where the study of the history of chemistry could have practically facilitated our work. The discovery of the inert gases was a direct result of William Ramsey's study of work which Cavendish had published in the later part of the 18th century.

Thus, there are examples to substantiate both the claim and the fact. Or were these examples just "isolated" cases of no general importance? In chemistry, we have the historically repated experience that the isolated case always indicated not an exception to an old rule, but an invitation to look for a new one. Beyond all special examples, this rule—and it is not entirely a new one—can afford a remedy against the wide-spread attitude of saturation which makes many of our youths feel that scientific life consists in a routine development of insignificant gadgets. History can make us aware that we are far

from having reached a completed system of science. The greatest problems are still open. It is the practical function of the study of our history to alert us to the great problems of the future.

The history of our science, or any science, is to an essential part the story of the men and their human organizations who created science. The special conditions under which they lived and worked may have been vastly different from ours; yet, much practical sense can be found in studying their solutions to general problems which remain quite similar to our own. Every one, whether he is a candidate for the presidency of the nation or a graduate student considering his course for the future, can discover practical stimulation from the command and the warning contained in old Paracelsus's motto: "Don't be anybody's man if you can be your own!"

Annual Convention: To be held by the Association of American Soap & Glycerine Producers, Inc., January 27th to 29th, at the Waldorf-Astoria, New York. The impact of the United States election and world conditions in 1953 on the soap and synthetic detergent business will be the principal topic. A special session, January 27th, will be concerned with fatty acids. New developments affecting glycerine will be discussed at a special group meeting.

1953 GOLD MEDAL AWARD

Dr. John C. Warner, president of Carnegie Institute of Technology, Pittsburgh, Pa., has been awarded the Gold Medal of THE AMERICAN INSTITUTE OF CHEMISTS, for 1953, Dr. Gustav Egloff of Universal Oil Products Company, Chicago, Ill., chairman of the Jury of Medal Award, will announce at the meeting of the A.I.C. National Council on November 12th.

Dr. Warner receives the medal for "noteworthy and outstanding service to the science of chemistry and the profession of chemist, as a scientist of note, an educator for many years, president of an educational institution of high standing, and one who has long had the professional interests of chemists and chemical engineers at heart."

The medal will be presented to Dr. Warner at the Annual A.I.C. Meeting to be held in Philadelphia, Pa., May 12-13, 1953.

One Per Cent: Of our national income, or two and one-half billion dollars, is now spent annually on research and development, according to Dr. H. A. Leedy, director of Armour Research Foundation, Chicago. "We will need to increase these expenditures in the years ahead if we wish to be the leader in technology."

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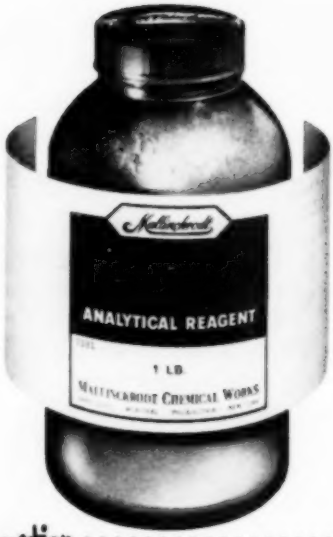

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Presentation of Honor Scroll to Dr. Emil R. Riegel

Lawrence H. Flett, F.A.I.C.

Recent President of The American Institute of Chemists, Inc.

(Presented on the occasion of the award of the first Honor Scroll of the Niagara AIC Chapter to Professor Riegel, May 21st, at Canisius College, Buffalo, N. Y.)

THERE is a much larger group here at this meeting than belonged to the Niagara Chapter when I first joined it. There were only nine other members at that time, but all of us looked forward to meetings where the other members were always present and where we met as a group of friends. Those were most successful meetings and a wonderful proof that the value of meetings cannot be judged by the size.

It is indeed a happy occasion to be back in Buffalo and to find all of the original members in the group here, when, among devoted friends, Professor Emil Raymond Riegel is to receive the first Honor Scroll of the Niagara Chapter of THE AMERICAN INSTITUTE OF CHEMISTS.

Professor Riegel's career in chemistry has been given over to helping students and to a fruitful service to the science of chemistry. He has been an exemplary member of the INSTITUTE, both as a participant and as a contributor. He is dearly loved as a teacher, always willing, always pleasant. No one can count the day wrong in which he has encountered such an engaging personality.

Professor Riegel is best known among chemists for his outstanding series of books under the title, *Industrial Chemistry*. This publication, now in its fifth edition, has had an influence on the development of industrial chemistry which is so great that it is difficult to estimate in its entirety. I am told by the Reinhold Publishing Company that about 70,000 copies of this book have been issued since the book was first published in 1928. Many of those who have studied the early edition have since become teachers themselves. When you consider this and the number of people who have used each copy, it is safe to say that every chemist in the United States has been benefited by its teachings.

The published articles concerning the science of chemistry have multiplied in recent years until they have overwhelmed us. Each publication the chemist studies brings forth many new publications, until he finds himself confounded by the current literature alone. This has become so

great that no chemist could absorb it all, even though he devoted his entire life just to studying it.

In his science of chemistry, far-sighted educators have provided us with centers of information. They have gathered together essential facts in limited fields and published them in readable form. Without this help, education would be impossible. Without it, chemistry would be a science confined to dusty shelves of neglected libraries; with it, chemistry is a growing dynamic force that is shaping the destiny of nations.

The members of THE AMERICAN INSTITUTE OF CHEMISTS have been particularly active in the preparation of books. At a recent meeting of the Institute, twenty per cent of those present were authors of well-known books. When we honor Professor Riegel, we honor all authors who have unselfishly devoted their spare time to help others.

Chemists are indeed indebted to Professor Riegel for his life-long service to chemistry and to their interests. Those of us gathered here who have been more closely associated with him have been privileged to enjoy a warmth of friendship that has always accompanied his work. His youthful enthusiasm belies the years which have brought about his retirement from the University of Buffalo, and it is our wish that he find in this retirement the full measure of happiness which could hardly be complete without some further contact with his all-absorbing interest in chemistry.

The citation on this Honor Scroll reads:

In recognition of his great contributions to industrial chemistry both through many years as a well-loved teacher and through the inspiration which his book "Industrial Chemistry" has given so many students.

Dr. Riegel Honored by Niagara Chapter

DR. Emil R. Riegel, F.A.I.C., was honored by the Niagara AIC Chapter with its first Honor Scroll, at its annual meeting held at Canisius College, Buffalo, N. Y. This was the night for presenting the student awards; for welcoming the visiting AIC ex-president, Lawrence H. Flett; for the election of officers for the ensuing year, and for the discussion of new business.

Student medals were presented "in recognition of leadership, excellence in scholarship, and character," to Mario Acitelli of the University of Buffalo; to Chester Szczypkowski of Canisius College, and to Paul H. Waszeciak of Niagara University.

The new officers for the current year were introduced: Chairman, Lothar Sontag; Vice-chairman, Dr. Robert H. Schular; Secretary, Theodore E. Gilbert; Treasurer, Frederick Sievenpiper, and Representative to the National AIC Council, Dr. Hans O. Kauffmann.

"Something more" was promised to the audience after the completion of the business session. This turned out to be the presentation of the first Honor Scroll of the Chapter to Dr. Emil R. Riegel, retiring chairman of the Niagara Chapter. The presentation was made by Mr. Flett in his usual felicitous manner (page 529).

In accepting the Scroll, Dr. Riegel spoke briefly and extemporaneously in acknowledgment of "a great honor graciously worded and presented, which I hardly deserve, but which I appreciate very deeply. . . . The devising and presenting of this Chapter Honor Scroll to the retiring chairman exemplifies perfectly the main interest and concern of THE AMERCAN INSTITUTE OF CHEMISTS, and that is the person, the man, and the personal relations, rather than the abstract science and knowledge."

Dr. Riegel was born in Metz, Alsace Lorraine, in 1882, later coming to the United States. He received the B. S. and Ph.D. degrees from Harvard University. After graduation, he became works chemist and assistant superintendent for Cochrane Chemical Company (now part of Monsanto). In 1916, he joined General Chemical Company as research chemist. He left in 1920 to be assistant professor of chemistry at the University of Buffalo, where in 1924, he was made associate professor, and in 1928, professor. He retired from this position in May 1952.

His special fields of interest are industrial and colloidal chemistry, organic synthesis, and chemical machinery. He is the author of many technical articles in the scientific and other journals, and of two books. *Industrial Chemistry* and *Chemical Machinery*.

Dr. Riegel was elected to the chairmanship of the Niagara AIC Chapter in May 1951 for the fiscal year ending in May 1952. His gracious and charming personality enhanced his ability to serve as a leader who advanced the Chapter's influence, as these same qualities also endeared him to the Chapter's members.

Unlimited: The opportunities offered to chemists and chemical engineers in the oil industry, according to Dr. Gustav Egloff, Hon. AIC, while speaking at the National Chemical Exposition in Chicago, Ill. "As a result of its competitive vigor and research-mindedness, the petroleum industry is continually broadening its horizons. With each new development, the way is opening for many more." The oil industry now employs about 17,000 scientists in research and production.

The Responsibility of Chemists in Patent Matters

Dr. Francis X. Murphy

Patent Division, Legal Department, Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.

(Presented at the AIC Annual Meeting, May 8th, as part of Session D, "Employer——Employee Relations")

ANY well-organized research department will turn out many inventions. Most of these will never reach large-scale use. However, since it is often difficult to predict the future of any invention at an early stage, each of them must be considered for protection by patents. Twenty years or more may elapse between the date of the invention and the expiration of a patent covering it. Today's inventions, which are the basis of the chemical industry of the future, must be handled with care and every chemist doing original work has certain responsibilities in these matters.

I—Learn the Characteristics of Inventions

It is essential that the chemical staff and the management be so organized that the patenting of inventions will be handled rapidly and efficiently. In the first place, the chemist should have some knowledge of the classes of patentable subjects—particularly those in which the majority of inventions of concern to the chemical industry occur. He should also recognize that not all advances in his field are patentable—only those which are new, useful and inventive.

These three essential features mark every patentable invention—novelty, utility and inventiveness. It goes without saying that the chemist should be thoroughly familiar with the literature, both patent and technical, in his particular field of research and should generally have little difficulty recognizing novelty when it occurs in his work. The invention must not have been used by others in the United States or patented or described in any printed publication in this or any foreign country before his invention or more than one year before his patent application. However, prior knowledge or use abroad, which is unknown to the inventor, is no bar to a patent, nor is secret use of the invention in this country.

Utility, the second essential quality of a patentable invention, should normally be easily recognized. Since a large part of our research projects are devoted to the preparation of known compounds or new compounds for specific uses, utility generally is not a

problem. The unexpected by-product or an unexpected primary product of a new reaction always creates a problem. Some of these materials have no obvious utility when first uncovered, but may develop real value in time. Each of them should be considered for patenting. Perhaps with a little foresight and imagination on the part of any group of chemists, some of these sidelines could prove of real importance. Obviously, the main lines of investigation being pursued by the laboratory should not be neglected to determine the utility of by-products of research.

Inventiveness must also be found in the chemist's work before a patent may be obtained. Defining inventiveness is difficult. However, there are certain qualities that can be looked for in inventive developments. The minimum that is asked is that the invention would not be obvious to any person who is well-trained in the field of interest and aware of the prior art. If the chemist in making his invention has gone contrary to the opinion of experts in his field, then the inventiveness of the development is so much the stronger. It should be realized that many discoveries which are economically valuable are not patentable inventions. The question of inventiveness is one that may well be referred to the patent division of the company once the other two characteristics, novelty and utility, have been found. Incidentally, the chemist should be aware that the act of invention must include not only the conception or mental act, but also reduction to practice, the actual operation of the invention or at least visualization of the concrete means for operating it.

II—Look for Patentable Invention in Work

Not only must the chemists' work have certain qualities to be considered invention, but it must fall in certain well defined classes of subject matter to rate this distinction. The chemist should familiarize himself with these classes. Perhaps the easiest way to do this is by a short discussion with those responsible in his organization for patent work. Examples from the chemist's work or from work with which he is familiar may be used most readily to illustrate the various subjects which may be patented. These are defined by the patent statute as being an art, machine, manufacture or composition of matter and improvements thereof. The chemist's invention is most likely to fall in the classifications "art" or "composition." The term "art" includes various processes for carrying out chemical reactions. "Composition" includes not only new compounds but physical mixtures and technical materials such as resins. However, it must be noted that a mixture of known materials is not patentable unless the substances present produce an effect beyond what could be anticipated from the known

properties of the materials used. The chemist should be on the lookout for effects of this nature—synergism in the action of the composition or unexpectedly improved physical properties of the composition. Observations such as this can be of considerable assistance during the prosecution of a patent application. The matter of anticipation presents some difficulties. The Patent Examiner may combine references and conjure up one "skilled in the art" who is considerably more versatile and inventive than any ordinary chemist. In general, if the composition in question is one of appreciable value and there is some indication of coaction of the components, it is advisable to file an application.

Improvements in processes or in products may be patented, but the improvement must have some reasonable degree of inventiveness. Chemists should realize that in chemical work, improvements which result in a considerably more efficient process may be difficult to patent. This is particularly true if the improvement amounts to more careful handling of materials, more carefully controlled conditions, and does not represent any unexpected or unusual effect. One final note on patentable subject matter: the bare discovery of a new use for an old product is not patentable. This often seems to bother chemists and perhaps their surprise at this feature of patent law indicates a deficiency in the law. Often, so-called "use" patents have claims to compositions in which the old compound is claimed as a composition with certain inert ingredients such as solvents or solid diluents. However, patents of this nature may be difficult to enforce.

III—Bring to Attention of Management at Early Stage

Assuming that all the essential features of an invention have been found in the chemist's work, he must, in good time, draw the matter to the attention of his supervisor and, in turn, to those in his organization that are responsible for the decision on whether to file a patent application. There are various systems in use for this purpose. In smaller organizations, it may mean merely an oral dis-

cussion with the proper member of the management who will decide whether an application is called for. It should be emphasized that written memoranda are much preferred to oral discussions, since they serve as disclosures of the invention and may, at a later date, serve as evidence of sustained interest in the invention. More complex organizations may use a formal procedure in which a written outline of the invention is submitted to a committee for evaluation. The records of the committee's discussions may also be of considerable importance at a later stage in the prosecution of the patent and should be carefully preserved.

A word of warning might be inserted here—watch out for the slow-moving committee that may waste precious days or weeks. If your patent application comes into conflict with an application filed in the Patent Office at an earlier date, your chance of prevailing in the interference may be less than one in ten. It is, therefore, vitally important to obtain as early a filing date as is feasible. Do not wait until sufficient experimental work has been conducted to bring the invention to a high state of perfection. Certainly a minimum of experimentation is required in order to define properly the scope of the invention that is to be claimed, but this should be in the nature of high-spot testing. The extent of this work will vary considerably with the nature of the invention. Those which in conception are of such perfection that they require no experimental confirmation are rather rare in chemical work. However, the highest possible yield and the best possible conditions for the new reaction need not be known before an application is filed.

The early filing date is particularly important when a new field is opened and when fundamental broad patents are desired on a product or process. If necessary, a continuation-in-part application may be filed in which is described and claimed details developed after the initial application was filed. The rule should be: Roughly check the scope of the invention; file the application; perfect the invention if it warrants it. Of course, inventions will vary considerably in importance to your company. Occasionally the really big one comes along which should be given special treatment. Other inventions of a more routine nature will appear and finally those of marginal importance for which a patent application is questionable.

IV—Careful Records of Chemist's Work

A very real, and often tedious, responsibility of the chemist is the keeping of clear, complete and accurate records. After all, the thing that a chemist produces in return for a salary is information in the form of a set of records, reports, and oral advice to his management, with perhaps

an occasional sample of a new compound or composition. Since this is true, some real thought should go into the records and reports. The records are, of course, of great importance in connection with any interference that may be encountered in the prosecution of a patent application based on the chemist's work. I have stressed the very real value of an early filing date in winning interferences. However, when a junior party in an interference does win, it is because he has good records particularly with regard to the corroboration of the reduction to practice. Many chemists do not realize how important it is that the reduction to practice of an invention be observed by one who is not a co-inventor and can understand the invention. If a major invention occurs unwitnessed, it may be advisable to have a competent chemist immediately repeat it according to the inventor's directions. Furthermore, if an interference is settled between the parties outside of the Patent Office, the patent generally is conceded to the party with the earliest completed invention. This, of course, must depend upon the records of the chemist. The chemist should acquaint himself with the method preferred by his company for keeping records, witnessing notebooks, and so forth.

It should be pointed out that patents are rarely, if ever, the primary object of chemical research. The object is generally information useful in the preparation of new compounds or in the more efficient operation of known processes. Patents are definitely of importance as insurance that the company sponsoring the research may not be deprived of the fruits of its work and may exclude others from its inventions. Patents are insurance, and insurance may be considered a necessary evil, but, nevertheless, necessary in today's industrial organization.

V—Assist in Preparation of Application

Another and, possibly, the most time-consuming responsibility of the chemist in patent matters is assisting

in the preparation of applications. Time well spent at this stage may mean considerable saving in time and effort during the prosecution. Various methods are used in the preparation of patent applications. The chemist may be required to submit a formal and detailed report to the patent division to serve as a basis for the application. Alternatively, the chemist may be interviewed by a liaison man who prepares a report to serve as the basis for the application. In some organizations the patent division is an internal department. In others, the patent attorney is not a full time employee of the company. There are various points in favor of each system. However, to my mind, there are very definite advantages in having a man, well trained in the particular technical field of interest, go directly to the inventor, discuss the matter thoroughly with him, and prepare at least the specification of the application, if not the complete application.

The chemist's cooperation in this matter is essential and, in turn, the liaison man must be able to speak the language of the technical field in question with fluency. If any prior reports on the problem are available, they should be reviewed by the liaison man before the interview. If the members of the patent division can drop in on chemists occasionally and discuss informally the status of various problems, all to the good. The presence of patent personnel at some research conferences may also be beneficial.

Interviews should be carried out with the minimum of disruption of the chemist's work. The chemist's job is research, development, or other related tasks, not the preparation of patent applications. He should not be required to spend an undue amount of time explaining fundamental concepts to the patent division, nor should he be required to prepare long, detailed reports specifically for the use of the patent division. The less paper work of this kind, the more research can be accomplished. However, time spent in discussions with patent personnel should not be considered wasted. A strong patent position is essential for most companies and there is nothing more annoying than finding that your product or process can not be used by your company because of a patent issuing to a competitor.

The chemist is expected to furnish certain types of information for use in the preparation of a patent application. In the first place, he must assist the patent attorney in defining the limits of the invention. Not only must the best conditions known for operating the process and preparing the product be given, but limits such as those of pH, temperature, concentration, pressure, must be defined as broadly as possible in order that the claims of the patent may not be evaded by competitors. This may call for some cautious speculation, but care

must be taken that only conditions under which the invention operates are included; otherwise, the claims, including inoperative conditions, may be invalid. Often, at an early stage in the development of the invention, it is quite difficult to define these limits, but a real effort must be made to do so, in order to obtain the strongest possible patent.

When a patent application has been prepared, the question of inventorship must be decided. Here again the chemist is depended upon to keep careful records. If his notebook is kept in the form of a diary, entering not only descriptions of actual experimental work but also suggestions that have been made with regard to future work and notes on discussions or meetings at which research work has been considered, the matter of deciding inventorship will be considerably simplified.

The chemist has a definite obligation to be perfectly candid with regard to inventorship. The patent law requires that the application be filed by the inventor or inventors, not by the group supervisor, not by the research director, nor by the vice-president in charge of research, unless one of these is actually the inventor. Note that a patent bearing the wrong inventors may be invalidated for this reason and, though an application bearing an extra inventor may be corrected, one lacking one of the inventors must be refiled and the original filing date is lost. The chemist should realize that the designation of an inventor on a patent application is not a matter of prestige or a reward for diligence. In fact, the inventor may have a limited amount to do with putting the invention into actual large-scale operation in the shop. A great deal of valuable work goes into the development of each invention before large-scale production is possible. Squeezing the last 10 per cent of yield out of a new reaction may put it in a strong competitive position and yet the work which does this may not be inventive. In fact, there are many scientists who turn out excellent work year after year and yet never have their names on a patent.

The management should undertake to reward hard and intelligent work

suitably, but the choice of an inventor is a legal question that should be divorced from such considerations. Some companies pay a premium to inventors upon filing a patent application or issuance of a patent. There are many faults with such a system. Patent work should be considered a simple obligation taken on when a chemist accepts a position. If special awards are made, the primary object of industrial research, the search for new information of value in producing marketable products, may be forgotten in a scramble for patents.

VI—Assist in the Prosecution of Applications

In the ordinary course of the prosecution of a patent application many questions of a technical nature arise. Rare indeed is a patent granted without some technical arguments on the part of the attorney. In fact, if claims are allowed without objection by the Examiner, it is almost certain that the applicant has asked for too little. Although the attorney or liaison personnel may be able to answer all of the rejections which are made by the Examiner on technical grounds, they must often depend on the chemist to shoulder some of this responsibility. This may involve the preparation of affidavits to overcome the prior art cited by the Examiner. Again, it may involve finding language with which to claim the invention as broadly as possible in light of the prior art. In most cases, patent claims are appreciably altered during the prosecution of the application. It is most important that fatal limitations in the claims be avoided and in this the chemist can be of great help.

This matter of the consideration of the prior art cited during the prosecution of our patent brings to mind another phase of patent work where the chemist may very well be of real service to his employer; that is, in keeping abreast of the new patents that appear in his field. There is a wealth of information in the hundreds of patents that issue every week. Since the issuance of a single patent may vitally affect a whole research program involving many men, when such a patent issues it must be evaluated immediately and whatever adjustment found necessary must be made in the research program. The responsibility in this should be shared by the management, patent personnel, and the chemist. Some care must be taken in reading and interpreting patents and this is particularly true of any attempt to determine questions of validity and infringement.

VII—Assistance in the Management of Issued Patents

When the patent has been applied for, fought through prosecution, and issued, the chemist's responsibility is not at an end. The effective seventeen-year life of the patent is just beginning. If the chemist's employer decides not to issue any licenses under the patent, there must be continual

vigilance to guard against infringement of a valuable patent. If prolonged infringement of the patent is permitted, the owner may not be able to assert his rights. The chemist may be of assistance in this phase of patent work in detecting infringing compounds or compositions.

On the other hand, if it is decided to issue licenses on the patent, the chemist may be obliged to assist, for instance, by demonstrating the merits of the patented product or process to prospective licensees or, possibly, by carrying out developmental research to further the utilization of the patent. If, as is the case with the great majority of patents, no large scale use is made, it may be shelved. The insurance policy has been paid for but no opportunity arose to collect on it. But don't put that patent completely out of mind. On more than one occasion patents that semed to be of little value have seen further service under changing conditions in the industry.

VIII—Avoid Premature Disclosure

Any chemist doing original work must exercise due care with regard to publications and their effect on the patent position of his employer. If patent protection is to be sought, the application should ordinarily be filed before the appearance of the first paper describing the work. The matter of foreign patent applications must also be considered. Most foreign countries are parties to the International Convention and as such permit filing of a patent application up to a year after the date of the corresponding United States application with retention of the domestic filing date. It goes without saying that careless discussion of new work with individuals outside the chemist's organization can be very dangerous. Many companies have publication committees of which at least one member is familiar with patent work and who must pass on any publication before it appears.

Finally, I would like to point out that the patent law and practice need not be dry and boring. It can be of very definite interest and value to the chemist, if an effort is made to understand the fundamentals of the system. For instance, the drawing of claims calls for clear, logical, analytical thinking. A patent must contain claims which cover only that which the application can support and just as much as is not covered by the

prior art. Preparing claims of this nature may call for the most skillful type of presentation of ideas. If the chemist will take the responsibility upon himself of acquiring a basic knowledge of the patent law, he should improve his own skill in dealing with patent matters.

Summary

I might summarize the responsibilities of chemists in patent matters as follows:

1. The chemist should know the characteristics of patentable inventions:

2. His records should be kept with the requirements of patent practice in mind;

3. He should be alert for patentable matter in his own work;

4. Such matters ought to be brought to the attention of his management at an early stage;

5. Assistance must be given to patent personnel in the preparation of applications and in choosing inventors;

6. Patent personnel should be aided in the prosecution of patent applications;

7. The chemist should realize that he has a part to play in sound management of issued patents;

8. Occasionally the chemist will be called upon to assist in other patent matters such as the evaluation of patents offered to his employer; and

9. He should remember that vigilance with regard to premature disclosure of patentable matter must be observed.

It may seem to you that, if a chemist takes on all the responsibilities that have been enumerated, he will have little time for anything else. Actually, in most cases, these matters should not occupy a chemist for more than an hour or two a week, unless he is especially productive of patentable inventions or under unusual circumstances.

Proper utilization of the patent system can bring benefits to the chemist, to his employer, to the industry, and to the country as a whole. The chemist can play a vital part in his field.

Elected: Dr. Leslie G. Jenness, F.A.I.C., as vice-president in charge of research for Kennecott Copper Corporation. He joined Kennecott in 1950 and since then has supervised research activities. A graduate of New Hampshire University, Dr. Jenness took the M.A. degree at the University of Maine and the Ph.D. in chemical engineering at Columbia University.

Speaker: Simon Collier, F.A.I.C. addressed the newly-formed Trenton (New Jersey) Section of the American Society for Quality Control at its September meeting. As national president of the Society, he discussed its activities and presented a film on modern quality control.

Shipping Regulations for Chemicals

T. C. George

Assistant Chief Inspector, Bureau of Explosives

(Presented at the AIC Annual Meeting, May 8th, as part of Concurrent Session E, "Industrial Safety and Hygiene.")

THE Bureau of Explosives is presently a division of the Association of American Railroads, and while there are more than one hundred private firms or industries which are affiliate members, it receives by far the greater part of its financial support from the railroads.

Although the Bureau of Explosives is not a government agency, the Interstate Commerce Commission is authorized to use the services of the Bureau by an Act of Congress under which the regulations governing the transportation of explosives and other dangerous articles are codified.

About forty-five years ago, and shortly following a few disastrous explosions and accidents, our railroads realized that they had had adequate demonstration of a crying need for some standard methods to assure safe handling of explosives. As an outgrowth of their sad experiences, the Bureau of Explosives was formed, and using that embryo as a clearing house or central location for gathering data, a few rather simple rules were established for the handling of explosives. These rules were largely in the form of a gentlemen's agreement between member railroads and representatives of the explosives' industry who saw the benefit that would be derived if further accidents could be avoided.

As time went on these rules were enlarged upon, and dangerous articles other than explosives were included among the items so regulated. In addition, the railroads and members of the Bureau saw the desirability of having the practices which had been laid down given the force of law, in order that they might become standard throughout the manufacturing and transportation industries. As a result of this early interest in the matter, an Act of Congress was passed empowering the Interstate Commerce Commission to write and enforce regulations to govern the transportation of explosives and other dangerous articles. To a large extent the rules which had already been established were adopted and have since been enlarged upon to include new chemicals and provide for new packing methods.

From the foregoing you will see that the regulations are not static and are constantly undergoing changes to meet the current requirements. As a result of this activity, the Bureau of

Explosives has grown in scope of activity, but still serves the purpose for which it was originally organized, and continues to act as an educational institution for the purpose of acquainting shippers and carriers with the best known means of assuring safety in transportation.

I have used the word "regulations" several times and I shall no doubt have to do so repeatedly in further discourse on my subject. I know that in this age of government bureaus and controls we think of regulations as onerous rules or requirements imposed by some tyrannical body for no good or worthwhile reason. I hope, however, to show how these particular regulations have their origin and how in their final application they serve the requirements of the chemical industry rather than hamper the industry.

Perhaps nowhere are democratic principles more carefully practiced than in the preparation of the Interstate Commerce Commission regulations governing the transportation of dangerous articles, and the chemical industry is constantly called upon to assist in the establishment of those practices which are necessary to safety in transportation and provide the rules which will govern its shipments.

The Bureau of Explosives has for a number of years acted as a clearing house for data relative to the hazards of dangerous articles, and the information we have thus accumulated is not duplicated elsewhere in the country. Furthermore, we have been able to serve both shippers and transportation agencies through our efforts to become acquainted with and understand the problems of all concerned.

It would not be practicable for me to make any attempt to discuss detailed requirements of the regulations. Knowing as you do the wide variety of materials with which the chemical industry is concerned, you can appreciate that any set of regulations which would be adequate to assure safety in transportation are necessarily voluminous. It is true that by the simple expedient of prohibition or the imposition of unnecessarily severe restrictions, we could have a brief set of regulations. As a matter of fact, this policy has been adopted by a few local regulatory bodies but such regulations are doomed to be violated. Such brief rules cannot contemplate the varying degrees of hazard or the needs of the producers and users of the dangerous commodities affected. A regulation which is impracticable is probably worse than none at all.

The Interstate Commerce Commission Regulations are divided into sections or parts, so that those regulations applying to shippers will be found in a different part of the publication than those applying to carriers. Also, in order to keep the regulations from becoming too voluminous, the general regulations which apply to all classes of dangerous arti-

cles are in a separate part of the regulations. It would be impossible for us to prepare separate pamphlets so as to publish complete regulations for each dangerous article or even each type of dangerous article, and therefore the uninitiated will be critical when he discovers that part of the things he will need to know are in the front of the book and other portions near the center, and still others in the section which contains the specifications for shipping containers. Nevertheless, this difficulty is not insurmountable and after a little thumbing of pages the plan of the regulations will even seem reasonable.

The Numbering System

Since the regulations are codified under authority given the Interstate Commerce Commission by an Act of Congress, it is necessary that they become a part of the Federal Archives, and hence a numbering system acceptable for use in the Archives must be employed. This accounts for the somewhat burdensome numbering of the various parts and sections of the regulations. This system is necessary for legal purposes, but could probably best be abolished when viewed from a strictly practical point of view.

Part 71 of the regulations, which except for the reasons just stated would more appropriately be Part I, contains general information relative to the plan of the regulations, the Act of Congress under which they are prescribed, the means by which changes in the regulations can be effected, and similar data. This part of the regulations, which is relatively brief, should be reviewed by all persons interested in the transportation of dangerous articles.

Part 72 consists chiefly of a list of all the more common dangerous commodities, together with certain explanatory information pertaining to the description of articles offered for shipment. For each article, the list also shows its classification under the regulations, specific references as to the sections in the regulations where the packing requirements will be located, and the color or kind of label which is required on the shipping container. To a degree, this list serves as an index to all but the more general portions of the regulations.

All of you are familiar with chemical dictionaries and encyclopaedias and can readily appreciate that it would be impracticable to attempt to list a specific name for each dangerous

article which might conceivably be shipped in a publication designed for general use, and there would be no advantage in doing so. It is for that reason that the list is limited to those articles which are of considerable commercial importance or to those articles which have peculiar properties and transportation hazards necessitating special or limited packing requirements even though they are not of appreciable commercial importance. To make provision for the articles not specifically named, the list contains such shipping names as High Explosives, Low Explosives, Flammable liquids, n.o.s. (n.o.s. is an abbreviation for *not otherwise specified*), Corrosive liquids, n.o.s., Flammable solids, n.o.s., Oxidizing materials, n.o.s., etc.

In addition to the more specific materials, the regulations must necessarily make provision for the shipment of compounds and mixtures, and for that reason it also includes such names as Anti-freeze compounds, liquid, Cleaning compounds, Chlorates, n.o.s., Arsenical compounds or mixtures, n.o.s., Fireworks, Mercury compounds, n.o.s., and numerous others of like nature.

Part 73 of the regulations contains the regulations applying more specifically to shippers, and includes the general rules relative to the closures of containers, the design of containers, an explanation of specification containers and when they must be used, and other general information relative to the reuse of containers and their maintenance, including such items as the maintenance of tank cars, cargo tanks used on motor vehicles, portable tanks, and steel cylinders used for the shipment of compressed gases. This part also contains the more specific requirements for packing explosives and dangerous articles. In order to properly catalogue this specific information, the dangerous articles are divided into several general classifications, which are in some cases divided into sub-classifications. For example, the first general classification treated is Explosives. Because of the varying hazards of materials which are properly described as explosives, this classification is subdivided into Class A, Class B, and Class C explosives, in the order of their relative hazard in trannportation. Class A being the more hazardous materials such as the initiating explosives, which include the azides and fulminates of certain metals, as well as those other explosives which readily detonate or burn with explosive violence. You will discern that in dividing explosives into classes we are employing only three classifications, whereas the military departments of the Government use as many as ten. However, for our purposes these three classifications, which are sometimes referred to as dangerous explosives, less dangerous explosives, and relatively safe explo-

sives, instead of Class A, B, and C, are adequate.

Kinds of Hazard

In order to promulgate suitable regulations for the transportation of dangerous articles it is necessary to consider more than one kind of hazard, and to do so it is frequently necessary to define quite specifically just what hazards cause an article to fall within a certain group or classification.

Explosives are subdivided into classifications dependent largely upon their sensitivity to shock or impact, their stability, and the amount of damage that would be liable to be caused should they function accidentally while in transportation.

In the second category of dangerous articles considered by the regulations we find the flammable liquids. To those of you who have always treated your chemistry as a rather exact science, the fact that flammable liquids are defined in the Interstate Commerce Commission Regulations as those having flash points of 80° Fahr. or below, as determined by Tagliabue's open cup testing device, may come as a surprise. Flammable liquids are not hazardous in transportation so long as they are confined in the containers in which they are shipped and therefore our real interest lies in their tendency to give off flammable vapors when unconfined. Hence the open cup, and since there is no constant factor for converting open cup

results to closed cup results, or vice versa, the open cup apparatus provides the most suitable method despite its faults. Although not identified as Class A, B, and C, flammable liquids are also divided into classes dependent upon their flash point and their absolute vapor pressures, as well as their viscosity. It is readily appreciated that an extremely viscous liquid presents less of a problem in transportation than a very fluid one, that a liquid with a low vapor pressure does not require as strong a container as one with a high vapor pressure, and that a very volatile liquid is more of a hazard when its vapors are combustible than is a less volatile material. In recognition of these differences the flammable liquids are divided according to these properties and packages are prescribed for materials falling in each group. Additionally, there are liquids which are properly called flammable liquids but which have hazards due to other properties. Some are corrosive, others will give off vapors which ignite spontaneously, and still others have very low fire

points. Examples are such materials as Nickel carbonyl, Ethyl trichlorosilane, Ethylene oxide, and Carbon bisulfide.

The Flammable Solids

The third general classification of dangerous articles in the regulations includes the flammable solids and oxidizing materials. A flammable solid is defined as a material which, under conditions incident to transportation, is liable to cause fires through friction, through absorption of moisture, or through spontaneous chemical changes, or as a result of retained heat from the manufacturing or processing, whereas an oxidizing material is defined simply as a substance that yields oxygen readily to stimulate the combustion of organic matter. All of the materials in this group constitute a fire hazard. In it are included such widely diversified items as Benzoyl peroxide, Charcoal, Wet hair, Phosphorus, Oil rags, Fish meal, and Titanium metal powder. Because of their nature and practical limitations, it has been necessary to prescribe specific packing requirements for many individual items in this classification, although some generalization is possible in the case of Chlorates and Chlorate mixtures. Nitrates and mixtures thereof, and similar substances where hazards and physical properties are much the same.

Perhaps one of the greatest problems encountered in the transportation of dangerous articles is presented by those materials which under certain conditions heat spontaneously and under other conditions will not do so. Among these are such items as Charcoal, Fish meal, Impregnated fibers or fabrics in instances where animal or vegetable oils are used for impregnation, and even Roofing paper before it has been saturated with tar. In recent years a large part of the time of the Laboratory staff of the Bureau of Explosives has been devoted to a study of fires in this type of product and the educational work which has been made possible by this study has done much to reduce the number of fires occurring in transportation from this cause.

Corrosive Liquids

In the fourth group are the acids and other corrosive liquids. These materials are difficult to define and no exact criteria for a line of demarcation has been found practicable. Experience shows that such materials as acetic acid, both anhydrous and glacial, and phosphoric acid are not liable to create any appreciable problem in transportation, whereas strong caustic soda solutions and solutions of the mineral acids do cause considerable damage in the event of container failure. Losses resulting from the transportation of this class of material are rather high, partly due to the fact that no entirely acceptable substitute for the glass carboy has been

found and when a carboy containing from 5 to 13 gallons of a strong acid is broken in transportation and there is any other freight in the vicinity, damage is almost sure to occur. There are a large number of materials in this group which require special packing although there are certain general types of packages which are suitable for many of them.

Compressed Gases

Compressed gases are included in the fifth general classification in the regulations. Here again we find the hazards differing appreciably from those previously considered, but nevertheless hazards which are readily reduced by the use of properly designed containers and safety devices. Of course the nonflammable and nontoxic compressed gases have no transportation hazard other than that caused by the energy confined within the container, whereas flammable compressed gases have an additional flammability or explosive hazard. The compressed gas manufacturers and the cylinder and valve manufacturers have cooperated in the establishment of container specifications and regulations for the shipment of compressed gases, with the result that accidents are extremely rare even though cylinders of relatively light construction and practicable design are employed throughout the industry. In some foreign countries an acceptable cylinder for a given quantity of compressed gas will weigh almost twice as much as those authorized by the I.C.C. Regulations. We have been able to make use of the advantages of the high tensile alloy steels and at the same time retain a high factor of safety. In fact ,we have less accidents now than we did when heavier and apparently more rugged cylinders were the only ones in use.

Poisons

In the poisonous article group we have poisons designated as Class A, Class B, Class C, and Class D, or more specifically extremely dangerous poisons, less dangerous poisons, tear gases or irritating substance, and radioactive material. The last classification was added to the regulations about four years ago to take care of a then rapidly developing need for a set of standard requirements.

The extremely dangerous poisons include such materials as hydrocyanic acid, nitrogen tetroxide, phosgene, and other so-called war gases. While the warning label required on shipments of these materials bears the name Poison Gas, with the exception of nitrogen tetroxide most of the materials in this class are shipped at

pressures at or only slightly above atmospheric. Nevertheless, with few exceptions, these materials must be packed in steel cylinders in order to reduce to a minimum the danger of container failure.

The second subgrouping of poisons includes those which are primarily dangerous by being taken internally although some of them can also be absorbed through the skin. At any rate, contact is generally necessary whereas actual contact with the Class A, or dangerous, poisons would not be requisite to injury.

In the third subdivision of poisons are the materials which are commonly known as tear gases or tear gas producing substances. Except in transportation by rail expresss, where a messenger may be in the same car with the shipment, materials in this class have practically no transportation hazard but could under certain circumstances be a considerable nuisance.

Radioactive Materials

In the radioactive materials group, comprising the Class D poisons, the hazard to be considered and guarded against is quite different than that applying to any other class of dangerous articles, in that in the case of those materials emitting gamma rays, either primary or secondary, the complete elimination of radiation is impossible and the regulations are written so as to establish limits of radiation, or limits of leakage if you will allow me to use that term, which may not be exceeded. In no other class of dangerous materials do we contemplate leakage under ordinary conditions incident to transportation. Packing and shielding of radioactive materials must be adequate to prevent damage to shipments of undeveloped film as well as to protect the health of persons handling them.

Regulations applying to shipments also include marking and labeling requirements for packages, and specific standard labels are prescribed for each class of material. I will not go into detail with regard to these requirements, but I do wish to point out that each shipper must familiarize himself with those marking and labeling requirements applying to the particular class of commodities which he is called upon to ship.

Up to the present time I have talked only about regulations applying to shippers. However, in order that any job may be properly accomplished it is generally necessary that certain duties be fulfilled by all parties to the task, and that is true of the transportation of dangerous articles. The best package is of little avail if it receives abuse in handling by the transportation agency, and so in Parts 74, 75, 76, and 77 of the Commission's regulations we have rules applying particularly to the carriers. These rules include requirements relative to the loading and bracing of freight, the placarding of car, the handling of cars in switching operations, and the marking and billing for

shipments which are required to acquaint persons handling the freight with the possible hazards involved. The shippers are not required to carry the entire burden. It is by the united efforts of shippers and railroads that the excellent record in the transportation of dangerous articles of which we may presently boast has been attained.

I have necessarily presented this subject in a very general way, but I hope you will remember that we in the Bureau of Explosives are really interested in the safe and practicable transportation of explosives and dangerous articles and that you will call upon us to assist you in related matters.

A Definite Place: For women engineers in industry exists, "and a need for their talents in shaping America's technological future," according to William V. Kahler, president of Illinois Bell Telephone Company. He spoke at the Western Society of Engineers' luncheon in Chicago, Ill., September fourth. "With far too few engineers being trained today . . . we should not overlook the potential engineering talent possessed by many young women."

Moved: The Philadelphia branch sales office of Heyden Chemical Corp., to new quarters in the Lincoln-Liberty Building, Philadelphia 7, Pa.

The Nation's Economy: Will be characterized by growth and improvement, not maturity, so long as our research laboratories continue active in our universities and in our industry, said Dr. Crawford H. Greenewalt, F.A.I.C., president of E. I. du Pont de Nemours & Company, when he accepted the Chemical Industry Medal of the American Section of the Society of Chemical Industry, in New York, October 31st.

The presentation of the medal, given for "conspicuous service to applied chemistry," was made by Dr. Robert C. Swain, F.A.I.C., vice-president of American Cyanamid Company, and past chairman of the American Section.

Dr. Colgate W. Darden, Jr., president of the University of Virginia and past governor of that state, spoke on the accomplishments of the medalist. Harry B. McClure, F.A.I.C., vice president of Carbide & Carbon Chemicals Corporation, and chairman of the American Section, presided.

"The role of industry," Mr. Greenewalt said, "lies in harvesting for the American people the fruits of scientific discovery. To do so is its particular province and its particular genius. Industry has become the principal instrument through which science for science's sake has become science for humanity's sake. . . .

"In science, as in economics and politics, there has been in recent years a tendency to minimize the function and the importance of individuals. But whether we are dealing with industrial laboratories or with the university campus, we must not lose sight of the fact that no matter how elaborate our facilities, or how highly organized our programs, research progress is still the product of human ingenuity and depends for its success upon individual achievement. The complexities of modern research require cooperation between men of many disciplines, together with the highest administrative skills. Yet this teamwork need never submerge the talents of the individual. On the contrary, it should enhance them, since his mind will be left free to pursue the special task for which he has competence. . . .

"I think as a nation we must recognize that whatever the reward of a creative individual, it is small compared to the national benefits that accrue from his work. Rewards for individual achievements, no matter what form they may take, are bargains when measured against public benefits.

"Science does its best in a free society. Industrial and academic science together must be free to question the old and embrace the new, to eliminate the wasteful and crown the efficient."

Communications

On Invention

To the Editor:

I have read with interest the editorial, "Invention Should Be Taught," appearing in the January 1952 issue. Dr. E. C. Hughes, the author of the editorial, states:

> "Invention is one of the main things that industry and government expect of the research profession. The techniques to accomplish this universally-desired objective of research are not taught in any graduate school . . . When one discusses the possibility of teaching invention, he is told that it is an art . . . However, the millions of inventions on our books today indicate that many have been able to acquire the art . . . We should be in a position to start teaching invention and with the teaching will come the development of a science of invention which will make the teaching more effective . . ."

Dr. Hughes is unquestionably correct in his feeling that the methods of applied research, which lead to invention, are not nearly as widely taught as they should be. However, there has been at least one notable exception: In the early 1930's, Dr. Donald B. Keyes, F.A.I.C., then professor of chemical engineering at the University of Illinois, gave a course in the methods of industrial research which was intended to accomplish just what Dr. Hughes advocates. The course, based largely on the case method, was given to undergraduate students of chemical engineering in their senior year.

My understanding is that D. H. Killeffer's interesting book, "The Genius of Industrial Research," published in 1948 by Reinhold Publishing Corporation, is in large measure an elaboration of the material used by Dr. Keyes in this course. In the preface, Mr. Killeffer stresses his use of Dr. Keyes' material.

—E. H. Bohle

Praises Professional Education Report

To the Editor:

Of all the annual reports released at the Annual AIC Meeting, I thought the most trenchant and forward-looking one was Professor Withrow's on professional education.

All chemists interested in their profession should read it and ponder it.

Very pertinent in this connection is an article by Harry J. Fuller, Professor of Botany, University of Illinois, in Phi Beta Kappa's *Key Reporter, winter issue* (Vol. XVII No. 1), entitled "The Liberal Arts and Sciences . . . Luxury or Staple?" After analyzing some of the reasons for the loss of ground of the liberal studies and suggesting a more resolute and positive attitude on the part of their proponents, Prof. Fuller recommends a greater degree of cooperation between teachers of the

liberal arts and those in professional schools. In this connection he says:

> "My own experiences in this respect are extremely encouraging. One of my friends, a distinguished professor of engineering, has recently expressed to me his belief that some of the students in his college take too many courses in engineering. He added that his engineering college had set up a committee to investigate the possibility of fitting more liberal studies into its curricula, even at the expense of transferring certain engineering courses from a required to an elective status . . . A few months ago, the dean of a famous medical college wrote me that specialization in pre-medical training begins too early in the careers of many freshmen and sophomore students and that he should prefer to have matriculating in his institutions students with perhaps somewhat less work in the sciences and somewhat more work in the humanities and social sciences."

I feel that strengthening of this trend would be a substantial contribution to making chemists better educated as well as merely well-trained, and would go a considerable way toward correcting the unwholesome situation Prof. Withrow so clearly points out.

—M. L. Hamlin, F.A.I.C.

Suggests Additions to Check-list

To the Editor:

Drs. Bloch and Harber and the Chicago Chapter itself are to be congratulated upon compiling the excellent "Check-List for Prospective Employees" published in the March issue of THE CHEMIST. A great deal of studious effort goes into such a list although it seems very obvious—afterwards.

May I suggest that the check-list be reprinted on a single sheet and be widely distributed among prospective members of the AIC.

The following comments to the list are offered:

III E & F: "for individual and family" may be added.

Reason: Some medical service and insurance plans include family members and in some cases this might be of considerable bearing.

H: "Other benefits" may be added.

Reason: Discounts on the company's products, availability of company facilities, discounts on purchases through the purchasing department and similar practices encouraged by some employers, frowned upon by others, may result in surprisingingly high savings for employees.

V A: "secretarial services" might be specifically mentioned.

Reason: In too many organizations otherwise entirely up-to-date it is still customary that professional employees write their drafts and their final manuscripts by hand before they are turned over to the typist. This not only represents an annoying waste of time, it also prevents a potential executive from acquiring efficiency in dictating (to a machine or to the legendary blonde).

VI Add: Professional ability and background, integrity, personality and employment history of of the immediate superior(s).

Reason: There is a deep truth in the colloquialism that one works for the boss. He determines the assignments, gives or withholds assistance, and facilities, evaluates the results, passes judgment and credit and more than anything else influences progress and happiness in a job.

Unfortunately, it will not be possible for the potential employee

to procure full information as to all or even as to the majority of the points enumerated in the check-list. He should not forget that even today it is the employer, not the employee, who does the interviewing.

This does not detract from the value of the list compiled by the Chicago Committee on Economic Status.

—Dr. Otto Kay, F.A.I.C.

Editorial Appreciated

To the AIC President:

I have just written to John Bowman to congratulate him on his excellent editorial in THE CHEMIST (April 1952). I am so enthused by this that I am writing you to suggest that it might be an appropriate AIC activity to have some reprints of Bowman's article prepared for distribution to registrants at AIC and other meetings. It would be a lift to "first timers" (and others) and would also call attention to to a typical AIC activity.

—DR. ARTHUR ROSE, F.A.I.C.

Encourage Educational Television

To the Editor:

I wrote Mr. Flett a letter (copy enclosed) regarding encouragement of television programs of an educational nature. . . . I have previously sent a telegram in support of the Mr. Wizard's program. . . . Of course, there are other similar programs which should receive encouragement.

We have two objectives in mind, one is to promote any activity which is educational as well as recreational to compete with the less desirable bill of fare being offered in such copious quantities to our unsuspecting youth, and second, to promote interest in things of science at an early age so that there will be a good chance that more of the better students will select scientific or engineering careers. Our hope is that there will then be a larger number of students majoring in those fields thus permitting the schools to be more selective in admitting students to graduate training.

—Dr. Bernard S. Friedman,
President Chicago Technical Council, Chairman Chicago AIC Chapter.

The Letter Referred to Above

To Mr. Flett:

It was good of you to hear me out on the matter of encouraging the producers of "Mr. Wizard" on the tele-

vision. My son, Richard, age ten, and daughter, Alice, age eight, are staunch fans of Mr. Wizard, and I've personally enjoyed watching a number of his programs. His exhibitions and experiments in elementary science are very well done, and his explanations to his co-actors (a ten-year old boy and an eight-year old girl) are factual and simply presented.

This is the type of program we want our children to look at instead of the blood-curdling mysteries or the endless cowboy thrillers. Further, many of us sincerely believe that this program is contributing in a most constructive way to increased appreciation of the public for science, and to the stimulation of interest of young people in science as a potential career.

—Bernard S. Friedman, F.A.I.C.

Encouragement

To the Secretary:

I am very much interested in the AIC and definitely wish to continue my membership in this organization.

Again, I wish to express my sincere thanks to the National Council for presenting me with the Student Medal Award for 1951. It has been a major factor in encouraging me to take my present position as a graduate student at George Washington University and to continue my studies and research. I hope that the Institute will continue the practice of making student awards for many years to come.

—Thomas R. Munson, A.A.I.C.

On Germicides

To the Editor:

Dr. Klarmann's article in your Aug., 1951 issue, which I read with great interest, made me think of an article I wrote some thirty years ago on antiseptics and germicides of which I enclose a copy. I put it at your disposition for publication in whole or in part.

—Dr. N. Sulzberger, F.A.I.C.

Editor's Note: The publication to which he refers is a reprint from the *Medical Review of Reviews,* July, 1920, entitled, "Remarks on Laboratory Investigation of Antiseptics and Germicides." Too long for reprinting here, the following quotation from it may indicate something of its content:

"While the bacteriologist makes his observations on a single specific type of micro-organism which he has endeavored to isolate, in medical practice, mixed types are ordinarily encountered. Such 'symbiosis' of different bacteria will undoubtedly cause and necessitate modifications and changes in the general character and biology of each individual species present, so that the results of investigations of a specific type of bacterium in association with others must differ from those gained on the isolated species in 'pure' culture.

". . . By law of nature, every process, be it biologic, chemical or physical, produces, in the course of its action, just such bodies, conditions and effects as are hindering and detrimental to the undisturbed continuance of the process itself, such process being finally terminated if these bodies and effects are not, from time to time, removed or counteracted. This means, applying this law bacteriologically, that the processes of bacterial life and metabolism produce compounds and conditions inimical to the bacteria themselves and therefore, acting *per se,* as antiseptics and germicides . . .

"In the foregoing I have endeavored to call attention to some of the important differences between the conditions under which antiseptics and germicides are studied and investigated in the laboratory and those encountered in clinical practice, with the idea of showing that results obtained in the former field are of less value and less conclusive than they have often been considered—in fact they may not be at all corroborated by the experience of the practitioner. What we really care to know about a pharmaceutical preparation, in our particular case about an antiseptic and germicide, is not its germicidal power in the test-tube, in an artificial culture-medium, but rather its morbicidal disease-destroying properties on the living tissue. Unquestionably, chemical, biological, bacteriological investigations should be carried on carefully with all pharmaceutical preparations, but after all, the practitioner, for whom finally all this work is being done, is interested only in their 'physiological' efficiency, their efficiency in fighting the 'living' infection and pathogenic condition. There are endless numbers of substances which will kill bacteria in the test-tube and in the hands of the bacteriologist and chemist, but there are comparatively few which are available for such work in the body. In most cases, in studying a preparation for its antiseptic value, the question will narrow itself down to whether its affinity is greater for the bacteria present at the site of infection or for the cellular constituents of the tissues themselves (Bechhold & Ehrlich); that is, whether the preparation is more destructive to the cells of bacteria than those of the body. The question, as I have attempted to prove, can never be answered by purely bacteriological and chemical investigations, but chiefly by physiological methods, identical or closely related to those encountered in the actual use of the preparation in the hands of the practitioner . . . "

A Note to Chemical Authors

To the Editor:

I always read right through THE CHEMIST as it comes through the mail. From time to time I come across an expression that I never find elsewhere. On page 423 of the September number it occurs again.

On the eighth line it says: "industries *predicated* on the chemist's work." In this instance the editor of "Chemical Age" is responsible.

It would not seem necessary to borrow from the technical terms of English grammar when the following would be more expressive and possibly better style, as: "industries based on the chemist's work."

I think when this "predicating" occurs in future articles, you might substitute the above.

—HERBERT P. PEARSON, F.A.I.C.

Article Appreciated

To the Editor:

Please let me know the cost of two copies of THE CHEMIST, October 1951. I want one copy to post and another for library reference, in respect to Dr. Raymond E. Kirk's excellent article on page 417. I feel that every student of science (chemistry or otherwise) should memorize it!

—Librarian
Western Reserve University

The Gold Award: Of the *Financial World's* 1951 Annual Report competition was presented October 28th, to Dr. Charles Allen Thomas, Hon. AIC, president of Monsanto Chemical Company, St. Louis, Mo. In accepting the award for Monsanto's 1951 Annual Report, Dr. Thomas spoke of the responsibility of businessmen for carrying their communications beyond the realm of ordinary business matters, and he cited the importance of a "something else" which is a "great, intangible, spiritual quality which is a great motivating force in the pattern of business. . . . We must pull off our masks and show that this 'something else' is part of our being. We want profits, yes; but we want them in a climate of accord, a climate of understanding, and a climate in which we all have that satisfying sense of belonging. All of which should give our stockholders annual reports to be proud of—let us give them earnings to be proud of—but let us also give them companies to be proud of. And, in so doing, let us give to them and to the people of the world the conviction that we stand proudly for that 'something else.'"

Incorporated: The Bjorksten Research Foundation, a non-profit foundation for scientific research in pure and applied science. The announcement was made by Dr. Johan Bjorksten, F.A.I.C., president of the Bjorksten Research Laboratories, industrial research organization with offices in Madison, Wis., Chicago, Ill., Washington, D. C., New York, N. Y., and Houston, Texas. The Foundation "has been formed to explore and develop findings which do not have an immediate commercial application, but which, rather, strike at fundamentals . . ." A secondary purpose is to help provide the means by which scientific discoveries, inventions, and processes may be developed, applied, and patented. The Foundation will accept assignments of inventions or interests in them, gifts, bequests, and it will enter into contracts.

Four classes of foundation membership have been set up. The admission fee paid by each member may be considered a "loan" by the foundation, and will be repaid on a regular basis from the foundation's net earnings.

Sales Office: Of the Perkin-Elmer Corporation of Norwalk, Conn., opened in New Orleans, La., in the Lee Circle Building, under the direction of Seymour G. Linsley.

Sales Representative: Appointed by J. T. Baker Chemical Co., for the Ohio, Indiana, and Kentucky areas, Alfred P. Kerchmar, whose headquarters are in Cleveland, Ohio.

In Memoriam

On October second, nineteen fifty-one in Columbus, Ohio, died William McPherson, Honorary Member of THE AMERICAN INSTITUTE OF CHEMISTS.

William McPherson was Lt. Colonel in the Chemical Warfare Service, World War I. He was emeritus professor of chemistry in Ohio State University, and emeritus chairman of the Department of Chemistry; emeritus dean of the Graduate School, and emeritus president of the University, and past president of The American Chemical Society.

Seized of many honors, distinctions and achievements, he was the successor of Sidney A. Norton, first professor of chemistry at Ohio State University.

Some sixty years of active chemical teaching made him known to all except the present generation of chemists.

William McPherson was understood to have introduced laboratory teaching of chemistry in his Alma Mater, Ohio State University, after his doctorate at the University of Chicago under John Uri Neff. He had formerly taught physics, latin and chemistry in Toledo High School.

Dr. McPherson is understood to have introduced the chemical engineering curriculum at Ohio State University at or about 1902. He also brought into the University under instructions by the College of Engineering, its first professor of industrial chemistry and of chemical engineering. He recommended the divorce of metallurgical engineering from chemical engineering into a separate department to stand entirely on its own feet under the distinguished leadership of the late Nathaniel Wright Lord. McPherson finally, some twenty-eight years ago recommended the establishment of the separate Department of Chemical Engineering to encourage the budget which that subject required, a department which has developed many distinguished graduates and highly respected graduate work. This origination required no little courage at a time when many chemistry teachers desired to hold onto all modified curricula, (to aid in their own development budget), thinking also that the engineering was unnecessary

IN MEMORY

Of the late Dr. William McPherson, Hon. AIC, it is planned to name the laboratories of the Ohio State University, Columbus, Ohio, the "McPherson Chemical Laboratories." The ceremony will take place at the University's Homecoming Day, November twenty-second.

and (as he himself believed) chemical engineering to be but a passing phase of industry and of education.

To McPherson also should be given credit for suggesting, forty-five years ago, to the writer, that chemical engineering inspection trips should have extended national scope after the pattern of mechanical and electrical engineering under the pioneers Magruder and Caldwell, instead of our state wide trips merely. This lift from a chemical leader gave authority for the development of the monumental "Chemical Engineering and Industrial Chemical Inspection Trips," to which properly, chemists were invited from the very start.

Nor have they lessened in vigor and favor with industry except since a new college executive arbitrarily led the hitherto cooperating faculty to move them to a period of weather unseasonable, particularly to industry as well as students. But McPherson and early engineering teachers were all cooperation and never obstructive —not simple for educators.

Rightly or wrongly, the measure of a man often resides in little things. The writer was employed by McPherson, in spite of a vigorous argument, within five minutes of meeting him, in answer to an invitation to call for an interview regarding a position—for which he was not an applicant. The writer deplored the deterioration of chemical education through the submergence of qualitative analysis, thereby losing its training as well as practical value. That any branch of chemistry can belittle another is hard for men in industry to believe. Yet we all may remember how inorganic resisted the growth of organic. How organic resisted qualitative and quantitative analysis and physical chemistry. The failings of physical chemistry are still with us and physics itself may again cast all chemistry to the limbo of the scientifically useless. The future of chemistry depends upon every branch of chemistry helping every other branch. McPherson was only occasionally caught in the philosophy of chauvinism. In spite of current pressure he endeavored to develop a well-balanced department of strong teachers.

The first the writer saw of this kindly gentleman McPherson was about 1902. McPherson at a Philadelphia meeting of the American Chemical Society, together with Loeb, founder of The Chemists' Club, attempted to show Edgar Fahs Smith that working out of an unknown took an inordinate amount of a student's time in view of what he learned. But Edgar Fahs Smith retorted, "At this very lecture table, (John Harrison Laboratory, Pennsylvania), I every week before a class of chemists make a complete separation and individual verification of all the common metals and the acids from the same (?) solution,

and within the hour. Our students do not tell us, 'it takes a week to do an unknown'."

McPherson learned the lesson. He added more "qual." I always remember those two giants Loeb and McPherson and the Horatius on the bridge, Edgar Fahs Smith; it was not possible to forget. Those were the days when they debated chemistry. They are gone now, these Titons. Can *We* keep up the tradition?

—Dr. James R. Withrow, Hon AIC

Necessity: Technical assistance abroad, according to Dr. J. E. Hobson, director of Stanford Research Institute, Stanford, Calif. "Technical assistance must be given . . . particularly assistance directed toward increased productivity of the individual worker. In the end this aid may prove more effective than financial or military help, for such assistance produces where production did not exist and procreates its own success. Exported technical knowledge, skills, techniques and ideas add to the sum total of the resources of the free world, giving to all at the expense of none."

Construction: Proceeding rapidly on the new methanol plant of the Nitrogen Division, Allied Chemical & Dye Corp., South Point, Ohio, according to the September issue of the Division's new employee newspaper, *Nitrogen Division Life.*

Titanium Research: To be conducted jointly through agreement between Bohn Aluminum and Bradd Corporation, Detroit, Mich., and The Glidden Company, Cleveland, Ohio. The project will be headed jointly by W. E. McCullough of Bohn and Dr. B. W. Allan of Glidden.

Plant Maintenance Show: To held in the Public Auditorium in Cleveland, Ohio, Jan. 19th to 22nd. Advance registration cards may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, New York.

Expansion: Under way by Pennsylvania Salt Manufacturing Company, a new unit for producing chlorine, caustic soda and anhydrous hydrochloric acid at Calvert City, Ky., to cost $8,000,000 and a doubling of Pennsalt's ammonia production at Wyandotte, Mich. The company has also been increased by the acquisition of Sharples Chemicals Inc.

Organized: Atomic Center for Instruments and Equipment, 489 Fifth Avenue, New York, N. Y., a technical sales organization devoted exclusively to serving the atomic energy program with specialized instruments and equipment. Its foreign division is Atomlab International.

COUNCIL

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President-elect, Donald B. Keyes
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Albin Warth, *Baltimore Chapter*

National Council Meetings

Meetings of the AIC National Council are scheduled to be held at The Chemists' Club, 52 East 41st St., New York, N. Y., at 6:00 p.m., on the following dates:

November 12, 1952
January 14, 1953
March 11, 1953
April 8, 1953
May 11, 1953 (Philadelphia, Pa.)

Elected: Robert J. Painter as executive secretary and Raymond E. Hess as associate executive secretary of the American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa.

Donor: Pittsburgh Plate Glass Company of a new multiple fellowship to be organized at Mellon Institute, Pittsburgh, Pa. The administrative fellow for the group is Dr. T. H. Davies.

AIC Activities

C. P. Neidig, F.A.I.C.

New Jersey Chapter

The New Jersey Chapter will meet December 2, 1952 at the Military Park Hotel, Newark, N. J., preceded by a dinner at 6:30 p.m. (Tickets $2.90). The program includes a talk by Dr. G. L. Royer, F.A.I.C., director of analytical chemistry for the Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J., on "American Chemical Society Professional Activities." At 8 p.m., James Osterburg of the Police Laboratory of the New York Police Department, will speak on "Science versus Crime."

The Chapter has designated the evening as "Ladies' Night." Further information may be obtained from David W. Young, Esso Laboratories, P. O. Box 51, Linden, N. J.

Baltimore Chapter

Chairman, Maurice Siegel
Vice Chairman, Dr. Norris Matthews
Secretary-Treasurer, J. Bernard Edmonds
Representative to National Council, Dr. Albin H. Warth
Reporter to The Chemist, Ralph W. Lamenzo

The Baltimore AIC Chapter held its first fall meeting at the Blackstone Apartments, Baltimore. Dr. Walter Patrick, who is head of the Department of Physical Chemistry at Johns Hopkins University, was the speaker of the evening. His topic was "Silica Gels."

Dr. Patrick brought out the fact that silica gels have found a great outlet in the cracking process of the petroleum industry. Somewhere around 250 to 300 tons are used daily for cracking gasoline, and possibly five million monthly for war purposes, as a medium for protecting iron and steel implements from rusting. Strange as it may seem, silica gel by itself is a poor catalyst. Aluminum gels, with the same surface area, are also poor. However, mixing these two oxides together gave a 60 per cent conversion against a former 3 per cent.

Dr. Patrick also pointed out that the particles of silica gel are so fine that they cannot be examined by a microscope. Thus it became necessary to set up some means of obtaining the measurement of these gels. Tetra-ethyl-ortho silicate when burned in the air formed particles about 1/100th of a micron. In oxygen, the resultant particles measure somewhere around 200 microns. With the aid of the electron microscope, measurements on the average size of these perfect spheres were computed. This resultant material was called "Flarox" and when compressed is transparent like silica gel, but is only 1/3 as good as a catalyst. This tends to indicate that the particle size of "Flarox" is about three times that of the silica gel. Properties of "Flarox" have been studied, especially the heat of wetting this material versus silica gel. Since the heat of wetting "Flarox" is 1/3 that of silica gel, the difference indicates different water-carrying properties of the two materials. It was found that 600 degrees C. was the highest heat that these materials could be subjected to without altering their structure. It was assumed that the water in the material is not evenly distributed, but held in the points of contact, leaving the rest of the sphere bare.

Further study as to the electrical conductivity has been made, which shows that the aluminum has a plus proton

charge and the silica a negative charge. When silica gel is heated to about 450 degrees C. it will hold around two to three per cent water and gives a greater number of hydrogen ions which are the source of catalytic activity. It was Dr. Patrick's opinion that the field of this type of catalyst has hardly been scratched and seems to hold a great future. There is an ever-increasing need for catalysts that will offer bigger and better yields.

Magnesium, stated Dr. Patrick, is another metal that is being studied and all major oil companies are working on this problem.

A question-and-answer period followed the talk.

WILL YOU COME?

Nov. 12, 1952. Washington Chapter. Luncheon. Bonats Restaurant, 1022 Vermont Ave., N.W., Washington, D. C. Speaker: Dr. E. E. Fogel, Chief, Chemical, Rubber, Drugs & Fuels Div. Office of Price Stabilization.

Nov. 18, 1952. New England Chapter. M.I.T. Faculty Club, 50 Memorial Drive, 6th Floor, Cambridge, Mass. 6:00 p.m. Cocktail Hour. Dinner. ($4.00). Speaker: Earl P. Stevenson on "The National Science Foundation."

Dec. 2, 1952. New Jersey Chapter. Military Park Hotel, Newark, N. J. Dinner 6:30. ($2.90). Speakers: Dr. G. L. Royer, F.A.I.C., on "American Chemical Society Professional Activities;" James Osterburg of the New York Police Department, on "Science versus Crime." For information write David W. Young, Esso Laboratories, P. O. Box 51, Linden, N. J.

Dec. 4, 1952. Los Angeles Chapter. Dinner meeting. Speaker: Dr. Harold Olcott, Head, Vegetable Processing Div., Western Regional Research Lab. on "Chemical Contaminants and Additives in the Food Industry." Panel Discussion to include Dr. Guenther of University of California, and representatives from firms which market food additives. For information write, F. T. Bewley, Braun Corp., Los Angeles, Calif.

Dec. 4, 1952. Pennsylvania Chapter. Honor Scroll to be presented to Dr. Percy A. Wells, director Eastern Regional Research Laboratory, at the Penn-Sheraton Hotel, Philadelphia, Pa. Dr. John J. Willaman, Eastern Regional Research Laboratory, will speak for the recipient. Dr. Lincoln T. Work, AIC President, will make the presentation. For information write Dr. A. Farkas, Barrett Div., Allied Chemical & Dye Corp., Philadelphia 37, Pa.

Dec. 11, 1952. New York Chapter. Young Chemists' Meeting. 8:00 p.m. Hans Jaeger's Restaurant. ($1.50), 85th St. & Lexington Ave., New York, N. Y. Panel discussion on Job Finding. Speakers: John Andrews, Polytechnic Institute of Brooklyn; Gordon Whitcomb, American Cyanamid Co.; Ward Jackson, Commercial Solvents Co.; Donald Price, Oakite Products Co. Karl M. Herstein presiding. For reservations: Dr. Albert Guiteras, Hudson Labs., 117 W. 13th St., New York 11, N. Y.

Jan. 15, 1953. New York AIC Chapter jointly with the New York Section of the American Chemical Society. Hotel Commodore, New York, N. Y. Symposium on Public Relations.

Feb. 4, 1953. Niagara Chapter. Hotel Niagara, Niagara Falls, N. Y. Presentaton of Honorary Membership in the AIC to R. Lindley Murray, president of Hooker Electrochemical Co. Dr. Lincoln T. Work will make the presentation. Reservations should be made with T. E. Gilbert, 354 East Utica St., Buffalo 8, N. Y.

Feb. 5, 1953. Pennsylvania Chapter. Dr. Randolph T. Major, vice-president and scientific director, Merck and Company, will speak on "The Research Chemist in the Pharmaceutical and Medicinal Chemical Industry." For reservations call or write, Dr. V. V. Bellino, Barrett Div., Allied Chemical & Dye Corp., Philadelphia 37, Pa. (JE-3-3000).

May 7, 1953. Pennsylvania Chapter. Dr. Sidney D. Kirkpatrick, editorial director, McGraw-Hill Book Co., will speak on "The Rocky Road of the Chemical Professor." At this meeting Student Medals will be awarded. For informa-

tion and reservations: Dr. V. V. Bellino, Barrett Div., Allied Chemical & Dye Corp., Philadelphia 37, Pa. (JE-3-3000).

May 12-13, 1953. Annual Meeting of The American Institute of Chemists. Philadelphia, Pa. Presentation of A.I.C. Gold Medal to Dr. J. C. Warner, president of Carnegie Institute of Technology. Committee on Arrangements: Marcus Sittenfield, C. P. Neidig, and Hillary Robinette.

FOR ACTION

Retirement Benefits for Self-Employed

(Self-employed chemists are urged to take action on this report of a special committee.)

THE Internal Revenue Code provides for tax exemptions for contributions made by employers to qualified pension plans. It has been officially stated that there are now about 14,000 private industrial plans covering some 10,000,000 employees set up to supplement the protection of old age and survivors insurance provided under Social Security.

There is a substantial group of the population including most professional men who are excluded from Social Security and who are ineligible for benefits in the qualified pension plans which are limited in their coverage by law to "employees" or their beneficiaries.

The Keogh-Reed Bill, which has the support of both Republicans and Democrats, was formulated to correct this inequality. This bill provides for exemption from income tax on individual taxpayers' gross income of 10 per cent of the earned net income or $7,500 per year, which ever is lesser, for the purpose of establishing a "restricted retirement fund." Upon retirement the taxpayer then pays a tax on the amount he receives as retirement benefits at the then current rates.

Your Council in its April 1952 meeting indicated it favored the principle of the Keogh-Reed Bill.

The last session of Congress adjourned before acting on this Bill.

It will be reintroduced early in January in the next session of Congress.

It is suggested that those in favor of the principle of the Bill advise their Congressmen of their interest in having the Bill passed by the next session of Congress.

—Benjamin Sweedler, F.A.I.C.

For Your Library

Encyclopedia of Surface-Active Agents

J. P. Sisley and P. J. Wood. Chemical Publishing Co., Inc., 1952. 540 *pages.* $15.00.

This book is a translation by P. J. Wood, F.A.I.C., of Professor Sisley's Encyclopedia. It lists over 2,500 surface-active agents alphabetically according to their commercial names, and for each product there is a brief description of those properties which affect its use. A clever classification is used to indicate the chemical nature. In addition to this, there is a tabulation in which the commercial products are classified according to their structure and composition. There is a well-presented section giving general information on the use of the surface-active agents, which emphasizes uses in the textile industry, for which most of the surface-active agents were developed. Still another section describes the chemical composition of the principal types of detergents and gives general methods for their manufacture.

The authors are to be congratulated on their ability to hold to the middle of the road, avoiding a book which would be so large as to be unwieldy and at the same time putting forth a very large amount of essential information in concise and readable form. The book will be a great help to those who have been using the French edition. It is a "must" for the libraries of both the manufacturers and consumers of surface-active agents.

—Lawrence H. Flett, F.A.I.C.

Outline of Fundamental Pharmacology

The Mechanics of the Interaction of Chemicals and Living Things. By David Fielding Marsh. Prof. and Head. Dept. of Pharmacology, W. Virginia Univ. School of Medicine. Charles C. Thomas, Publisher. 1951, 219 *pp.* 6" x 9". $6.00.

This slender volume is packed with information which should prove invaluable to all those who have contact with chemical substances capable of being active medical agents in man or other living forms. A thorough understanding of pharmacological techniques by all those working in related fields would eliminate many of the discrepancies now existing in research and clinical medical literature, and this outline of pharmacological methods should make it possible for the biologist, the agriculturist, the clinician, the physiologist, and the biochemist to make their finding readily available to all the others to whom such data would be useful.

Many of the "wonder drugs" now being developed could be made available to physicians and veterinarians much more quickly, if the various groups producing and using them did not have to waste time on a repetition of each other's investigations, due to the lack of coordination in their findings. Dr. Marsh's work is an important contribution since it points out the logical position of each group in the entire picture.

—Dr. Fredecick A. Hessel, F.A.I.C.

The Theory of Isotope Separation

As applied to the large-scale production of U-235. By Karl Cohen, et al. McGraw-Hill. 165 *pp.* 6¼"x9¼" $2.00.

This theory is a mathematical development of the separation of two substances by counter current exchange. The concepts are those of distillation, wherein the column is called a cascade, the plate an element or stage. The mathematical development may thus be useful for computations in distillation. A contribution by Karl Fuchs is lauded, but it is a question whether such a bit of work entitled him to entry into the atomic development plants.

—Dr. John A. Steffens, F.A.I.C.

Symposium On Radiobiology

James J. Nickson, Editor. 1952. *John Wiley and Sons, Inc.*, 465 *pp.* 6x9¼". $7.50.

In this volume are reported the papers and discussions presented at the Oberlin Symposium on Radiobiology in June of 1950, sponsored by the Subcommittee on Radiobiology of the Committee on Nuclear Science of the National Research Council, assisted by the Atomic Energy Commission and the Office of Naval Research.

The 23 papers may be grouped into 4 distinct phases of radiobiology: 1. physical interaction of ionizing radiation and matter; 2. chemical changes arising from the transfer of physical energy; 3. biochemical effects; 4. changes in living tissue.

The editor and authors have presented an excellent survey concerning radiation effects on living things and cell constituents.

—Dr. Henry Tauber, F.A.I.C.

Quantitative Organic Microanalysis

By A. Steyermark. Blakiston Co. 389 *pp.* 6"x9". $7.00.

A highly commendable work that gives minute details, description and illustrations of the method of microanalyses. An excellent discussion of balances and their characteristics for practical purposes is given. The quantitative methods and special techniques follow the macro-analytical procedures. Optical methods and spectrometric methods are not included. Voluminous references to the literature are appended.

—Dr. John A. Steffens, F.A.I.C.

Die Biogene Amine

By M. Guggenheim (Basel). Interscience Publishers, Inc. 620 *pp.* 6½"x9½". $19.50.

A compilation of data on biologically significant amines, their synthesis, physiology and pharmacology. After a general appraisal of the field between the simple alkylamines and the alkaloids, it discusses the individual amines such as histamines, acetylcholine, betaine, etc.

This volume collects data which is usually in scattered sources and so it performs a useful service. Perhaps a better cross-indexing would improve the index.

—Dr. John A. Steffens, F.A.I.C.

Chemical Books Abroad

RUDOLPH SEIDEN, F.A.I.C.

Verlag Technik, Berlin NW 7: *Zement Chemie*, by Hans Kuehl, 2nd ed., 2 volumes: *I*, 307 pp. (69 ill.), *II*, 667 pp. (107 ill.). A standard work for the cement chemist and engineer, written by one of the foremost experts in his field who, in recognition of his work, received the German National Prize. *Vol.* 1 discusses in detail the physical-chemical principles of cement chemistry; *Vol.* 2 the practical aspects, i.e., the properties of the raw materials of cement, the manufacture of the various types of hydraulic binders (including special cements), and their uses. Numerous literature and patent references are given at the end of each of the 15 main chapters of Vol. 2.

Bailliere, Tindall & Cox, London (Williams & Wilkins Co., Baltimore 2): *Aids to Pharmaceutical Calculations*, by Mary E. Bolton, 1951, 96 pp., $2.00. Calculations of percentages, weights, and measures as they are needed in analytical work, microscopy, and in preparing and dispensing drugs are explained in an easily understandable manner.

Johann Ambrosius Barth, Leipzig C 1: *Lehrbuch der chemischen Technologie*, by H. Ost and B. Rassow, 24th ed., 1259 pp. (453 ill., 15 tables), DM 29.70. Here is an old friend of mine—but I wouldn't have recognized my "Ost": In 32 years, 13 new editions swelled its size over 50 per cent. Yet the text is still familiar—and in my humble opinion, this is the best textbook and one of the best reference books for any student, chemist, or engineer who wish to learn the facts concerning the many branches of chemical technology. ("Two-Sixty-Two," a relatively new American trade name of urea, is also mentioned in this reliable work.)

Wissenschaftliche Verlagsgesellschaft, Stuttgart: *Chemisch-technische Vorschriftensammlung*, by Horst Fey, 1952, 426 pp., DM 28.50. An encyclopedia of useful chemical-technical formulas which have stood the test of time. It gives information about the quality of the raw materials needed, their compounding and the uses of the finished products; e.g., detergents, glues, insecticides, paints, polishes, rodenticides, varnishes, etc. • *Farben-Lack- und Kunststoff-Lexikon*, by Hans Kittel, 858 pp., DM 48. Here is one of the most excellent reference books for the paint, varnish, plastic and other synthetic materials' industries——an encyclopedia of all the facts and figures of interest, including chemical formulas and constants. An English edition of this work, adjusted to American conditions, would meet a very definite need.

Strassenbau, Chemie und Technik Verlagsgesellschaft, Heidelberg: *Emulsionen*, by Erich Manegold, 1952, 326 pp. (123 ill.), DM 52. In addition to the theory of emulsions, this book discusses the practice of preparing such special emulsions as those containing metals, lacquers, fats, oils, rosin, paraffin, bitumen, and their applications in industry and science. This is a very helpful volume for all those engaged in solving the many difficulties so well known to anyone who ever worked with emulsions • *Organische und anorganische Wasch-, Bleich- und Reinigungsmittel*, by C. Luettgen, 1952, 365 pp., DM 48. An up-to-date compilation of 1,100 European, American, Canadian, Japanese and Russian patents dealing primarily with "soapless soaps" based on alkyl sulfonates or alkyl-aryl sulfonates, other detergents, inorganic washing agents, bleaching agents, and related products. This book will be of great value to research workers interested in this rapidly growing branch of the chemical industry.

Information

"Seed Treatments with Peroxygen Chemicals." Bulletin No. 33. BECCO Sales Corp., Sta. B., Buffalo 7, N. Y.

"Manual Outlining Student Guidance Activities in the Scientific Field." Manufacturing Chemists' Association, 5413 Empire State Bldg., New York 1, N. Y.

Flexible Heating Tapes and Bands." Circular No. 552. Scientific Glass Apparatus Co., Bloomfield, N. J.

"Progress Report on Tests of Krilium Soil Conditioner." Merchandising Div., Monsanto Chemical Co., St. Louis 4, Mo.

"John Crane Chemlon—the Best in Teflon." Booklet. Crane Packing Co., Dept. L 18, 1800 Cuyler Ave., Chicago, Ill.

"WACO Catalyst, Vol. 9TC." Catalog of Laboratory supplies and chemicals. Wilkens-Anderson Co., 4525 W. Division St., Chicago 51, Ill.

"Masonoid CTM. Foaming and Foam Stabilizing Agent." Tech. Bul. No. CD-6A, Masonite Corp., 111 West Washington St., Chicago 2, Ill.

"Colloidal Graphite Treatment of Mold Surfaces." Bulletin. Acheson Colloids Corp., Port Huron, Mich.

"Antiseptic Westone. Dust-control Method of Floor Care." West Disinfecting Co., 42-16 West St., Long Island City 1, N. Y.

"Cooling Towers." Bulletin. Aqua-Therm, Inc., 714 Albany St., Dayton 1, Ohio.

"Cannon Style EM 'Quiety-Type' Vibrators." Information. Cannon Vibrator Co., 1111 Power Ave., Cleveland 14, Ohio.

"Exhibit Techniques." Edited by Helen Miles Davis. Book. 112 pp. $2.00. Science Service, 1719 N. Street, N.W., Washington 6, D. C.

"Chemical Plant Library" 5 vols. Details from McGraw-Hill's Book Information Service, 327 West 41st St., New York 18, N. Y.

"Nopol—Its Properties, Reactions and Derivatives." Tech. Bul. issue by Naval Stores Div., the Glidden Co. Request from E. W. Colledge, GSA, Inc., Jacksonville, Florida.

"Colloids Out of the Sea," and "How to Use SeaKem Products." Samples. Tech. Bulletins. Seaplant Chemical Corp., 63 David St., New Bedford, Mass.

"Five Calibrated Beta Sources." Information. Atomic Instrument Co., 84 Massachusetts Ave., Cambridge 39, Mass.

"Design Advantages of Spence Regulators." Bulletin 700. Spence Engineering Co., Inc., Walden, N. Y.

"Plastolein 9250 (Tetrahydrofurfuryl Oleate)" Samples and pamphlet. Emery Industries, Inc., Dept. 5, Carew Tower, Cincinnati 2, Ohio.

"Labline Sectional Laboratory Furniture." Bulletin. Labline, Inc., 217 N. Desplaines, Chicago 6, Ill.

"The Consulting Chemist and Chemical Engineer in a World Economy." 32 pp. book. $1.00. Association of Consulting Chemists and Chemical Engineers, Inc., 50 East 41st St., New York 17, N. Y.

"Isotopes—a Five Year Summary of U. S. Distribution." Report. $1.00 from U. S. Government Printing Office, Washington, D. C.

"Sodium and Potassium Dichromates and Chromates." Chemical Safety Data Sheet SD-46. 25 cents. Manufacturing Chemists' Association, Inc., Woodward Bldg., 15th & H. Sts., N.W., Washington 5, D. C.

"Jasonal Titration Flask." Information. Jasonols Chemical Corp., 1085-87 Myrtle Ave., Brooklyn 6, N. Y.

"Neolyn Resins." Technical booklet. Hercules Powder Co., Wilmington, Del.

"Techniques of Plant Maintenance—1952." 182 pp. Book. $6.00. Clapp and Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

"New Polytetrafluoroethylene Electrical Insulating Film." Information. Minnesota Mining & Manufacturing Co., 900 Fauquier St., St. Paul, Minn.

"Stainless Steel Fastenings." Catalog. Star Stainless Screw Co., 195 Union Ave., Paterson 2, N. J.

"Champion Spray Gun." Information. Champion Implement Corp. 45 W. 45th St., New York, N. Y.

"Chemiquip Mercureceiver." Bulletin. Chemiquip Co., 6 E. 97th St., New York, N. Y.

"Bellows Rotary Work Feed Table." Bulletin T-85. W. C. Richards, The Bellows Co., 222 W. Market St., Akron, Ohio.

"The Analytical Balance and Its Use." 13 minute, 16-mm sound film, produced by University of Illinois and Fisher Scientific Co. For prints or rental write L. V. Peterson, 119 Greogry Hall, Univ. of Illinois, Urbana, Ill.

"Tygorust. New Vinyl Primer." Information. U. S. Stoneware, Akron 3, Ohio.

"Chemicals in Foods." Folder of information. Manufacturing Chemists' Assoc., Inc., 330 West 42nd St., New York 18, N. Y.

"The Nefluoro - Photometer." 16-pp. Booklet. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

"Colorede. Precision Light-comparator." Brochure. Instrument Development Laboratories, 163 Highland Ave., Needham Heights 94, Mass.

"New Patent Abstract Service." Information. Picturesort Co., 246 Church St., New Haven 10, Conn.

"Alumaloy Laboratory Clamps." Catalog. Laboratory Industries, Inc., 4710 W. North Ave., Chicago 39, Ill.

"Stretching Highway Dollars with Rubber Roads." Booklet. Natural Rubber Bureau, 1631 K St., N.W., Washington 6, D. C.

"Industrial Mechanical Freezers." Bulletin. Industrial Div., Webber Appliance Co., Inc., Indianapolis 3, Indiana.

"Rectangular Steel Bridge Flooring." Folders. Kerlow Steel Flooring Co., 222 Culver Ave., Jersey City 5, N. J.

"Trane Brazed Aluminum Heat Transfer Surface and Heat Exchangers." Information. The Trane Co., La Crosse, Wis.

"Slide Rule Type Calculator to Compute Steam Costs." Free to engineers, plant executives, and those needing it in work. Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis.

"Electrostatic Electron Microscope." Bulletin 807-C. Farrand Optical Co., Inc., Bronx Blvd. & E. 238th St., New York 70, N. Y.

"New Angle Head Centrifuge." Information. Scientific Glass Apparatus Co., Inc., 100 Lakewood Terrace, Bloomfield, N. J.

"High Homogeneity Research Electromagnet." Information. Varian Associates, 933 Varian St., San Carlos, Calif.

"Turbidity Recorder TR-6." Bulletin. Ess Instrument Co., Bergenfield, N. J.

"International Control of Atomic Energy." Official Records. General Assembly, Fourth Session, United Nations. $0.30. Columbia University Press, 2960 Broadway, New York 27, New York.

"Plastics Research & Technology at National Bureau of Standards." NBS Circular 494. 15 cents. Supt. Documents, U.S. Gov. Printing Office, Washington 25, D.C.

"Economic Policy for Rearmament." 30 pp. pamphlet. Committee for Economic Development, 444 Madison Ave., New York 22, N.Y.

Appointed: J. Richard Sayers as a purchasing agent for chemical raw materials for Monsanto Chemical Company's Organic Chemicals Division.

Opportunities

Doris Eager, M.A.I.C.

Chemists Available

Chemist, M.S., F.A.I.C.: 12 years' experience in synthetic organic, biological research, and production. Age 38. Permanent affiliation of prime importance. Box 110, THE CHEMIST.

Chemical Engineer: Licensed professional (chemical-mechanical) engineer. 20 years varied experience in development, engineering, and production. Prefer medium-sized manufacturing concern. Box 112, The Chemist.

Sales Executive: 13 years successful experience professional service, executive sales, and advertising. Age 39, Ethical pharmaceuticals. Box 114, The Chemist.

Plant Pathologist: Desires fungicidal field work or sales. B.S. Univ. Vermont. Diversified background in plant pathology and entomology. Box 116, The Chemist.

Positions Available

Chemical Sales Development Man: Around age 30. Willing to travel. B.S. degree in chemistry or chemical engineering. $5,000 to $7,000 plus travel expenses. Position in midwest. Box 115, THE CHEMIST.

Sales Executive: Medical and pharmaceutical industries. Either M.D. or Ph.D. Heavy sales experience. Salary up to $25,000. Box 111, THE CHEMIST.

Chemical Market Research: 2 to 4 years' experience. Prefer B.S. in chemical engineering or chemistry, plus degree in business administration. Location: Minneapolis. Box 113, THE CHEMIST.

Resigned: Dr. W. B. Hendrey, F.A.I.C., as president of DeLamar-Hendrey, Inc., Chicago, Ill. He has formed the Hendrey Chemical Company to engage in the distribution of fine chemicals, with offices at 1318 Sherman Ave., Evanston, Illinois.

New Plant: Being constructed for Vick International, Inc., near Manila, Philippine Islands. Estimated cost, $500,000. The plant will manufacture proprietary medicines and drugs.

Promoted: Dr. W. I. Shaw, F.A.I.C., from plant superintendent to general manager, coordinator of production, technical research and development, of Central Paint & Varnish Works, Brooklyn, N. Y., in recognition of his experimental and development work in the inclusion of plastic elements in the manufacture of paint. Dr. Shaw developed the new "Plastic Formula 124U" which the company added to the Velvetona brand of interior flat wall paint.

Dr Shaw, who was chosen 1951 Man of the Year in Technical Development and Research on Coatings in the paint industry, is a Phi Beta Kappa Columbia University graduate. As a colonel in the armed formes during World Wars I and II, he was awarded the D.S.C., Croix de Guerre, Belgian Militaire Medaille, and the British Bronze Victoria Cross.

New Laboratory: Opened in July by the Barrett Division, Allied Chemical & Dye Corp., at Edgewater, N. J., known as the Shadyside Applications Research Laboratory.

Moved: The Blakiston Company, scientific publishers, from Philadelphia, Pa., to 575 Madison Avenue, New York 22, N. Y.

Honored: Dr. James R. Withrow, Hon. AIC, by the Franklin County Historical Society, at a meeting on the Ohio State University Campus, October 23rd, when he was presented with Honorary Life Membership. The Society made the award at its celebration of Franklin County's one hundred and fiftieth birthday.

Unveiling: Of the oil portrait of Dr. James R. Withrow, Hon. AIC, by James R. Hopkins, N.A., will take place at the Annual Homecoming Day of the Department of Chemical Engineering of The Ohio State University, on November 22nd. Dr. Martin Fischer, F.A.I.C. will speak.

Appointed: S. J. (Sal) Gaudiello, F.A.I.C., to the technical research division of Basic Varnish & Research Corp., Brooklyn, N. Y., to develop new products and improve production.

Moved: Schwarz Laboratories, Inc., from New York, N. Y., to Mount Vernon, N. Y., where its manufacturing plant, research laboratories, and fine chemicals division are located. Schwarz Laboratories serve the brewing and food industries.

Opened: New sales district office at 711 14th St., N.W., Washington, D.C., by Corning Glass Works. Charles L. Day is manager.

Named: President of the National Vitamin Foundation, Inc., Dr. Norman Jolliffe, director of the Bureau of Nutrition of the New York City Department of Health. During the past six years, the Foundation has appropriated $534,164 for the support of research and an additional $109,000 for educational and public health purposes.

Speaker: Dr. A. J. Carlson, F.A.I.C., professor emeritus of physiology, University of Chicago, and honorary vice-president of the American Social Hygiene Association, at a regional conference of the Association in Los Angeles recently. His subject, "Can Syphilis and Gonorrhea be Eliminated from the Human Race?"

Speaker: Dr. Bernard L. Oser, F.A.I.C., director of Food Research Laboratories, Inc., Long Island City, N. Y., who during his recent trip abroad, addressed an audience of nutritionists at the Weitzmann Institute in Rehoboth, Israel, on "Toxicological Aspects of Food Control." Great interest was shown in the topic in view of the special problems of food production created by the trebling of the population of Israel within the past five years. This, together with restrictions on international exchange, have created a challenge to industry and agriculture to produce a sufficient variety and quantity of food.

Recent Developments in Chemical Industry in Western Germany

(Abstract of an address by Dr. A. F. Ernecke, Commercial Consul of the German Diplomatic Mission, given before the American Section of the Society of Chemical Industry, May 15th, New York, N. Y. Abstract prepared by D. H. Killeffer, F.A.I.C.)

DURING the first three years after the end of the hostilities, the possibilities for chemical development in Western Germany were especially difficult because of the continuous devaluation of the Mark, the consequent lack of building, and the lack of raw materials. The situation improved with the currency reform in June, 1948.

The upward trend lasted until the end of 1949. During the first half of 1950, a standstill took place, affecting the production and the export of chemicals, which was relieved as a result of the Korean crisis.

Generally, the chemical industry of Germany is still far behind other countries, which were able to develop a strong chemical industry during the war and afterwards during the time of the sellers' market.

Before the war, a balance existed between production and consumption in Germany as far as the development of benzene production is concerned. In the meantime, however, benzene has become a most valuable raw material (production of phenol for phenolaldehyde resins, starting material for styrol, production of Buna, synthetic detergents), so that now a considerable shortage exists. One-third of the produced quantity is used as motor fuel; because of export obligations the remainder is not yet fully available to the chemical industry.

The coke works have reached the limit of their capacity. The erection of new coke works entails a great deal of capital and time. Therefore, efforts have been made to produce a larger quantity of benzene by means of synthesis (catalytic aromatization of unsaturated hydrocarbon).

Germany contributed primarily to the manufacture and development of synthetic fibers by producing the first polyvinyl chloride fiber. Likewise, Germany contributed to a great extent to the development of a polymerization product on the basis of Acrylonitrile-Orlon. In contrast to the United States, the large scale exploitation of this product is only in preparation. The Farbwerke Mainkur intend to produce the polyacrylonitrile fiber "PAN" on a large scale. This fiber is considered very promising because of its excellent technical qualities.

Contrary to the Nylon fiber, which is produced from adipic acid and hexamethylenediamine, the German Perlon production starts from caprolactam. In contrast to the United States, the output of polyamide fiber in Germany is still very low—one-tenth of USA production in 1950. This production, however, will be greatly increased, since in the opinion of the experts, the polyamides will not be displaced by other synthetic fibers.

By means of completely new syntheses it has been possible to produce complicated chemical compounds of small chemical building stones, such as acetylene, ethylene, carbomonoxide, water, etc., the production of which has been impossible until now. (Prof. Reppe, Ludwigshafen). The first practical result of this type of synthesis was the production of butadiene. The method comprises a series of intermediary reaction products which, in turn, became starting materials for new syntheses and numerous other new products. One of them is vinylpyrrolidone, whose polymer (Kollidon) serves as a substitute for blood plasma. Kollidon 30 has found wide distribution in a great number of countries (Macrose, Plasmosan, Isoplasma, etc.) Moreover, Kollidon has the ability to bind other chemical substances, such as protein and poisons, make them water-soluble, and thus remove them from the body. A very high molecular Kollidon is of great interest as a means for depositing drugs, and, likewise, a radioactive Kollidon.

A coal high in ash is predominantly used today for motor fuel production, e.g. by means of the F-T procedure (Fischer-Tropsch). Further development of the F-T synthesis after the war (using new catalysts and higher pressure) resulted in an increased versatility of this synthesis (production of high octane gasoline, recovery of valuable waxes and Diesel oils). The costs of such a modern installation are not higher than in 1936; but lower, considering the prices which have gone up in the meantime.

Inasmuch as the supply of mineral oil in Germany is predominantly dependent upon the import of crude oil, and thereby bound to foreign currency, the task of getting the F-T installations into operation is of vital importance to the economy.

The synthetic oil industry, high pressure hydrogenation and F-T synthesis were developed as a result of the geological and political conditions. In view of the limited supplies of natural oil, the United States has a great interest in this German development. The cooperation in this field, from an economical, scientific and technical point of view, between the United States and Germany is therefore most desirable.

After the dismantling of the Buna installation of the Chemischen Werke

Huels, and after the lifting of the prohibition of production, some of the butadiene ovens could be put into operation again. The presently used procedure (four-step method), however, has to be looked upon as being outdated, and it is to be replaced by another method. Starting with butylene, the method has been brought to technical maturity in the United States.

Because of several laws of the Allied High Commission, there still exists a number of hindering prohibitions and restrictions for research and production in the German chemical industry. Attention is also called to the distressed conditions of chemical research. While $9.5 per capita are spent in the United States, Germany in contrast thereto is able to spend only twenty cents.

The possibilities for research are adversely affected by high taxes and by the small depreciation which is permitted. The scientific institutes of the universities and the technical high schools are especially concerned. It is particularly appreciated that the American Chemical Society made available some $10,000 to make possible further work for chemical handbooks like *Beilstein* and *Gmelin* in the interest of international research.

Completed: A new plant at Santa Clara, Calif., by Monsanto Chemical Co., to manufacture butylated melamine and urea resins.

Production: Underway on "cold rubber" following the $1,300,000 plant conversion program of Kentucky Synthetic Rubber Corporation, Louisville 1, Kentucky. A headquarters office will shortly be established in Stamford, Conn. Dr. Henry F. Palmer, F.A.I.C., general manager of the plant, has been elected a vice-president of the Corporation and will move to Stamford about November first. Howard R. Erwin, formerly director of engineering, succeeds Dr. Palmer as plant manager in Louisville. Eleven non-tire rubber companies own and manage the Corporation.

Announced: By Carl A. Setterstrom, F.A.I.C., sales manager, Textile Fibers Department, Carbide and Carbon Chemicals Company, the appointments of two district sales managers, Henry L. Pero in New England, and John S. McGilly in the New York area.

Distributors: Appointed by Schwarz Laboratories, Inc., New York 17, N. Y., for sales and service on Schwarz Fine Chemicals in Mexico: Casa Klapp, Chihuahua 123, Mexico 7, D.F.

Moved: The Dominion warehousing facilities and offices of J. T. Baker Chemical Company, to expanded quarters at 222 Front St., East, Toronto, Ontario, Canada.

Condensates

Ed. F. Degering, F.A.I.C.
Buckman Labs., Inc.

A plant costing about seventy-five million dollars is to be built by Carbide and Carbon Chemicals Co. at Seadrift, Texas, for the production of ethylene oxide.

Bacigro, a tiny bacitracin pellet produced by Commercial Solvents, when implanted subcutaneously near the base of a young pig's ear, materially stimulates growth and development.

Ilotycin, a new antibiotic of Eli Lilly and Co., is reported to be effective against many penicillin-susceptible organisms, as well as those that cause typhus, undulant fever, and Rocky Mountain spotted fever, and does not cause the side effects which are produced by some of the other antibiotics.

The newest sewage disposal system, developed at the University of California under an N.I.H. grant, consists of oxidation ponds on which green algae are grown, with almost complete conversion in twenty-four hours. The harvesting of the algae gives a high protein food and offers potential new sources of alcohols, drugs, fats, hormones, and synthetic chemicals.

E. I. du Pont, founder of E. I. du Pont de Nemours & Co., was interested in providing a living for himself and his family. In that effort he was successful, but the benefits secured to the nation by his enterprise are many thousands of times greater than anything he received for himself.

Job hunting hasn't been much of a problem for chemists with Ph.D.'s, according to C & EN, but unless quality holds up on quantity production, the Ph.D. may find keen competition from the A.B. in both development and production and even in research.

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